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PAXTON'S

MAGAZINE OF BOTANY,

AND

REGISTER OF FLOWERING PLANTS.

" Flowers of all hue."

VOLUME THE FOURTEENTH.

LONDON:
PUBLISHED FOR THE PROPRIETORS,
BY WILLIAM S. ORR & CO., PATERNOSTER ROW.

MDCCCXLVIII.

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31

LONDON:
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TO THE

MARCHIONESS OF LONDONDERRY,

WHO,

IN ADDITION TO THE MOST BRILLIANT ACCOMPLISHMENTS, AND A HIGHLY REFINED TASTE,

HAS EVER EXHIBITED AN ARDENT ATTACHMENT TO PLANTS,

This Fourteenth Volume

OF

THE MAGAZINE OF BOTANY

IS,

BY HER LADYSHIP'S KIND PERMISSION,

MOST RESPECTFULLY DEDICATED,

BY

HER GRATEFUL AND MOST OBEDIENT SERVANT,

JOSEPH PAXTON.

ADVERTISEMENT.

The labours of another year are over, and Fourteen Volumes of our Magazine have, with an almost unprecedented interest, been widely circulated throughout the world. From the scientific nature of a Botanical work, our most sanguine hopes could scarcely have warranted us to anticipate anything like the success, which has regularly attended our monthly labours during the last fourteen years; and that this interest in Botanical pursuits is not on the decline is obvious: Botanical collectors, more numerous than ever, are dispatched to almost every part of the world, and vast forest tracts, previously perhaps untrodden by a human foot, are in the course of being explored; vegetable treasures, which for ages have blown unseen, are daily reaching our shores, and occupying our gardens and glasshouses; scientific gardens are also being established in remote regions, and young men, previously prepared in the highest establishments of our country, are sent out to fill situations which in future years, with the facilities of communication we even at present possess, may effect for the world benefits which can now be scarcely calculated. The press teems with Botanical intelligence, and our own Magazine, we are happy to say, has received during the past year a steady increase of subscribers.

Without the danger of being considered ostentatious, we may venture to say that the style of the present volume, if not superior, is at least equal to any that have preceded it; the plates are finished in a very superior manner, and the subjects have been so selected, that individuals possessing only ordinary apparatus, may grow many of them to as great, or even greater perfection than the specimens from which our drawings were made; these, to say the least of them, serve to show what rapid advances have of late years been made by practical men in the art as well as the science of Floriculture.

In the present volume scientific subjects occupy a prominent position. Amongst these may be mentioned articles on Temperature, Meteorology, Characteristics of the Seasons, Winter Repose of Plants, and Functions of Foliage. The practical directions also are liberally interspersed, especially relative to such plants as are considered difficult to cultivate; indeed, it has been our aim to blend Science and Art so intimately together that reasons for every direction will be apparent to all our readers. And as it is our earnest wish to maintain inviolable that good feeling and mutual understanding which has for so many years been established, we shall always feel the greatest pleasure in availing ourselves of every facility for rendering the "Magazine of Botany" still more extensively useful: and thus relying upon a continuation of the kindness which has hitherto been so liberally bestowed, we again commence our labours with renewed energy and delight.

CHATSWORTH,
December 20*th*, 1847.

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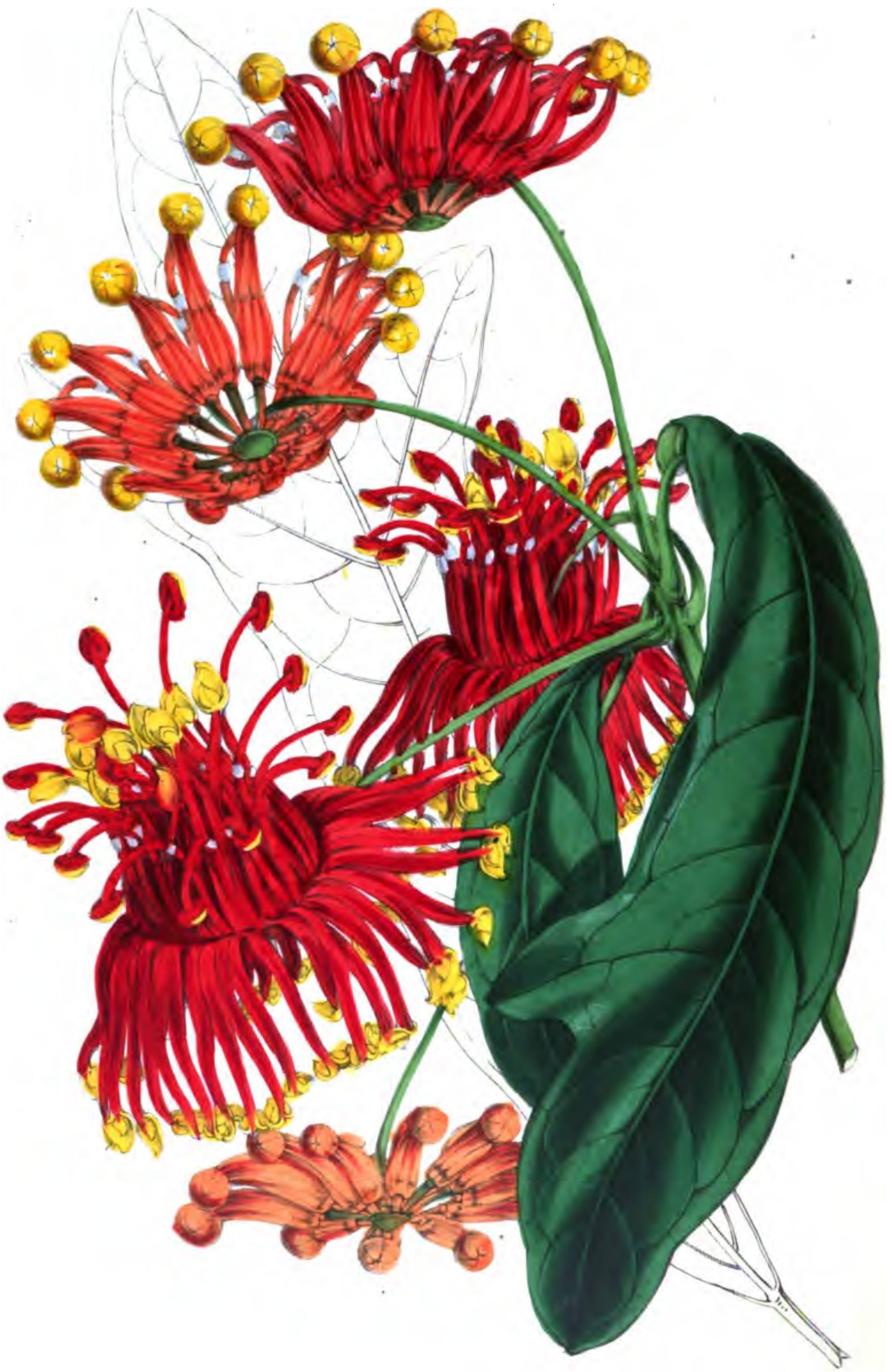


H Fitch del & lith

STENOCÁRPUS CUNNINGHÀMI.

(Mr. Cunningham's Stenocarpus.)

Class.
TETRANDRIA.

Order.
MONOGYNIA.

Natural Order.
PROTEÀCEÆ.

GENERIC CHARACTER.—*Leaves* alternate, quite entire. *Flowers* produced in axillary or terminal pedunculated umbels, ochreous or orange-coloured. *Perianthium* irregular, composed of distinct secund leaves. *Stamens* immerged in the hollow of the leaves of the perianthium. Glands hypogynous, consisting of one principal semi-annular process. *Ovarium* pedicelled, many-seeded. *Style* deciduous. *Stigma* oblique, orbicularly dilated, plain. *Follicle* linear. *Seeds* winged at the base.

SPECIFIC CHARACTER.—*Plant* a small evergreen tree. *Leaves* large, obovate, lanceolate, entire, sinuated, pinnatifid. *Umbel* compound. *Flowers* silk orange-coloured.—*Bot. Mag.*

SYNONYME.—*Agnostus sinuata.*

WHAT was said respecting *Agnostus sinuata* in the last volume, will have led to the supposition that the plant which bore that name is no ordinary one; and indeed it is not, for its inflorescence is of the most singular beauty. Since we wrote that notice, *Stenocarpus Cunninghami* has been published as its name, by Sir W. Hooker, who had the honour of naming the species. Sir William's character is adopted above, and his further account of it introduced at page 21.

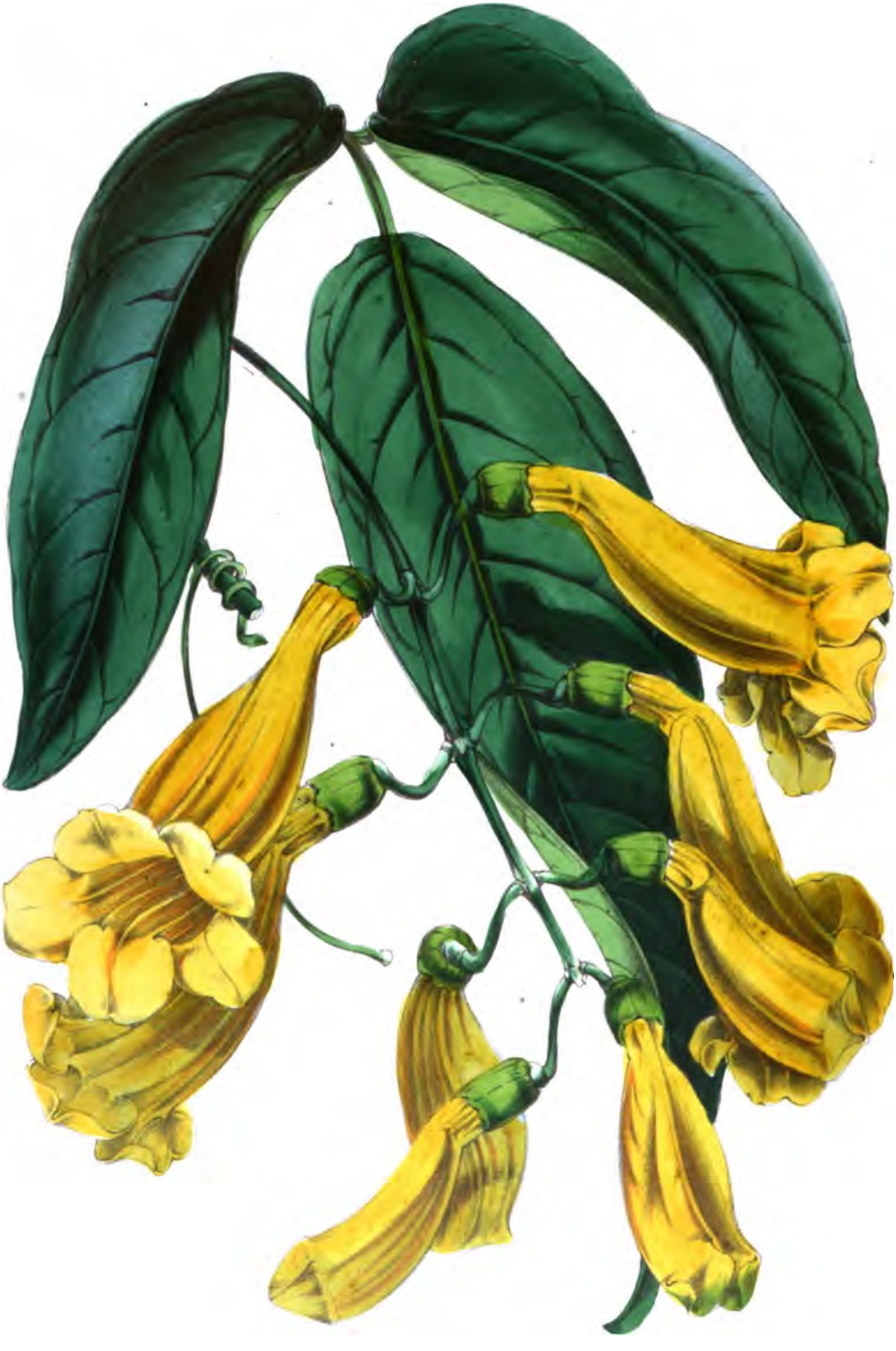
Next to the extraordinary structure of the strikingly beautiful floral organization of our plant, the surprising variation in the foliage of different cultivated specimens is the most remarkable feature in its character. Naturally, the leaves are pinnatifid, eighteen inches and upwards in length: and the same is the case with those produced under culture, where the plants have abundant root-room. But so widely different is the shape and size of the leaves of plants which have limited space to root in, that it is difficult to believe they are the same species. Many leaves of such plants have no sinuations whatever, and the majority but few, while in size neither are much larger than the pinnæ or lobes of those borne by plants having ample root-room.

Two specimens, produced under the above cramped culture were last autumn, clothed with leaves of small dimensions. One of these—a plant in the "United Gardeners' Nursery," King's-road, Chelsea—was the first to bloom, and from it our drawing was taken; this had been long growing in a pot much too small for the plant, and had been severely pruned and placed in a stove, where it burst into flower. The other was also comparatively confined at its roots, and had been for a long time experiencing injudicious treatment. Under different circumstances our Chatsworth plant flowered, in a splendid manner, producing its blossoms upon the oldest as well as the young wood.

Our plate very satisfactorily shows the splendour of the inflorescence; but the specimen represented was hardly an average one, nor will so limited a space allow such to be portrayed. The portions of inflorescence growing from the axils of the leaves and on the old wood from where they had fallen, are very freely borne, and vary in the number of umbels each produces. A fine dried specimen, cut from our plant, has eight flowers in different stages of development. The plant is a splendid evergreen, growing erect and tall when left to itself, without many side branches.

The management of this fine plant is very simple; it is hardy, and will bear much rough usage. But its flowering is another affair, as will be thought when it is recollected that sunshine like that of last summer was necessary to throw the plant into bloom. In cultivating *S. Cunninghami*, those measures which tend to produce early maturity should be employed. Propagation is effected by cuttings.

Stenos, narrow, and *Karpos*, fruit, gives the generic name.



S Holden del & lith

BIGNÒNIA CHAMBERLAỲNII.

(Mr. Chamberlayne's Trumpet-flower.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
BIGNONIÀCEÆ.

Generic Character.—*Calyx* campanulate, five-toothed, rarely entire. *Corolla* with a short tube, a campanulate throat, and a five-lobed bilabiate limb. *Stamens* four, didynamous, that is, two long and two short, with the rudiment of a fifth. Lobes of anthers divaricate. *Stigma* bilamellate. *Capsule* silique-formed, two-celled, having the dissepiment parallel with the valves; seeds disposed in two rows, imbricate, transverse, with membranous wings.

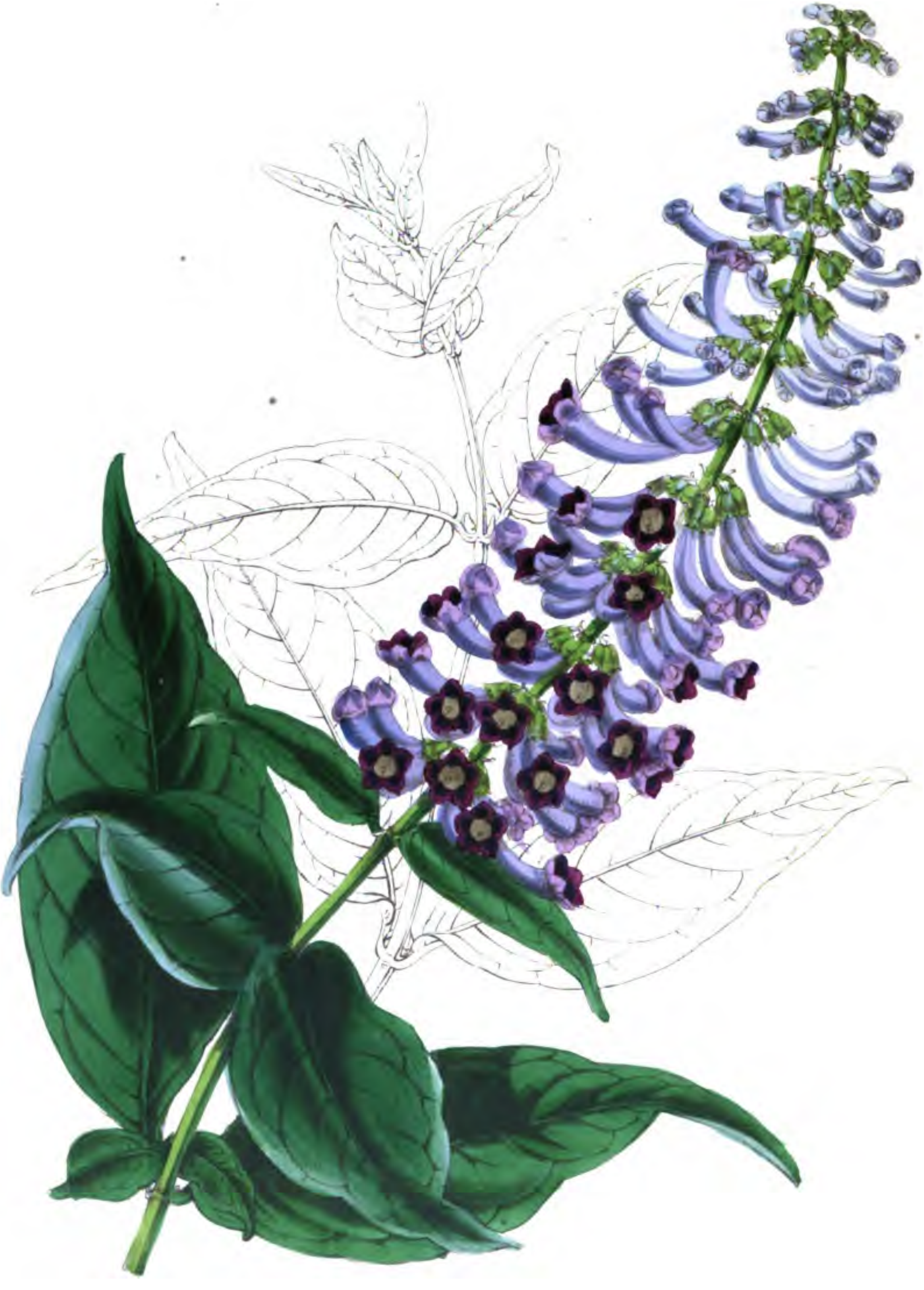
Specific Character.—*Plant* a climbing evergreen. *Branches* terete, glabrous. *Leaves* conjugate; leaflets ovate, acuminated, glabrous, shining above. *Tendrils* strong, simple. *Racemes* axillary, six to eight-flowered. *Calyx* cupulate, entire, or obsoletely five-toothed. *Corolla* funnel-shaped, yellow; segments obtuse.—*Don's Gard. and Bot.*

Synonyme.—*B. æquinoctialis.*

Of the many plants catalogued as *Bignonias*, and which are enumerated as species of that genus, very few are in cultivation. How it comes that such manageable, and in many other respects interesting plants, are not more favourably regarded, is not easily determined. There cannot be a doubt but many are eminently calculated to reward the efforts of culturists; and although a great proportion of the genus are climbers, and would be more in place on the rafters of the greenhouse and stove, they are equally as tractable when grown in pots like *Allamanda*, *Stephanotus floribundus*, and others. The fact that nearly the whole are considered stove plants may have operated to hinder an extensive cultivation of the family; but it should not; for of all the reputed stove species there are few that will not dispense with the protection of that house and flourish in the greenhouse, or even in the open air, under favourable circumstances.

The species of which a plate is here given bloomed in perfection last autumn in the stove at the Exotic Nursery (Messrs. Knight and Perry's), when the above drawing was taken. *B. Chamberlaynii* was planted in the house and secured to a trellis immediately beneath its roof, and covered at the above period a large space with handsome foliage and flowers. It is a rather slender-growing evergreen climber, having many recommendations to secure attention, not the least of which is its disposition to blossom abundantly without any stimulant being employed to induce it to do so. Any tolerable position in a greenhouse or mild stove might be devoted with advantage to *Bignonia Chamberlaynii*, when, if its roots and branches are allowed freedom, it will succeed all the better. The present specimen enjoyed the latter privileges, and, in addition, a gently warm moist temperature and partial shade. It is easily propagated, and is an old species, a native of Brazil, introduced in 1820.

Bignonia is in memory of Abbé Bignon, librarian to Louis XIV.



S. Holden del & lith.

Buddleya Lindleyana.

BUDDLÉYA LINDLEYÀNA.

(Dr. Lindley's Buddleya.)

Class.
TETRANDRIA.

Order.
ANGIOSPERMIA.

Natural Order.
SCROPHULARIÀCEÆ.

GENERIC CHARACTER.—*Calyx* campanulate, five-toothed. *Corolla* tubular; limb four to five-cleft, equal, spreading. *Stamens* four to five, nearly equal, inclosed; anthers composed of two parallel, distinct cells. *Stigma* clavate, two-lobed. *Capsule* crustaceous; dissepiment constituted from the inflexed edges of the valves, inserted in the thick spongy placenta. *Seeds* angular, scobiform; testa loose, membranous. *Albumen* fleshy. *Embryo* almost the length of the seeds; cotyledons oblong, compressed; radicle very short.—*Don's Gard. and Bot.*

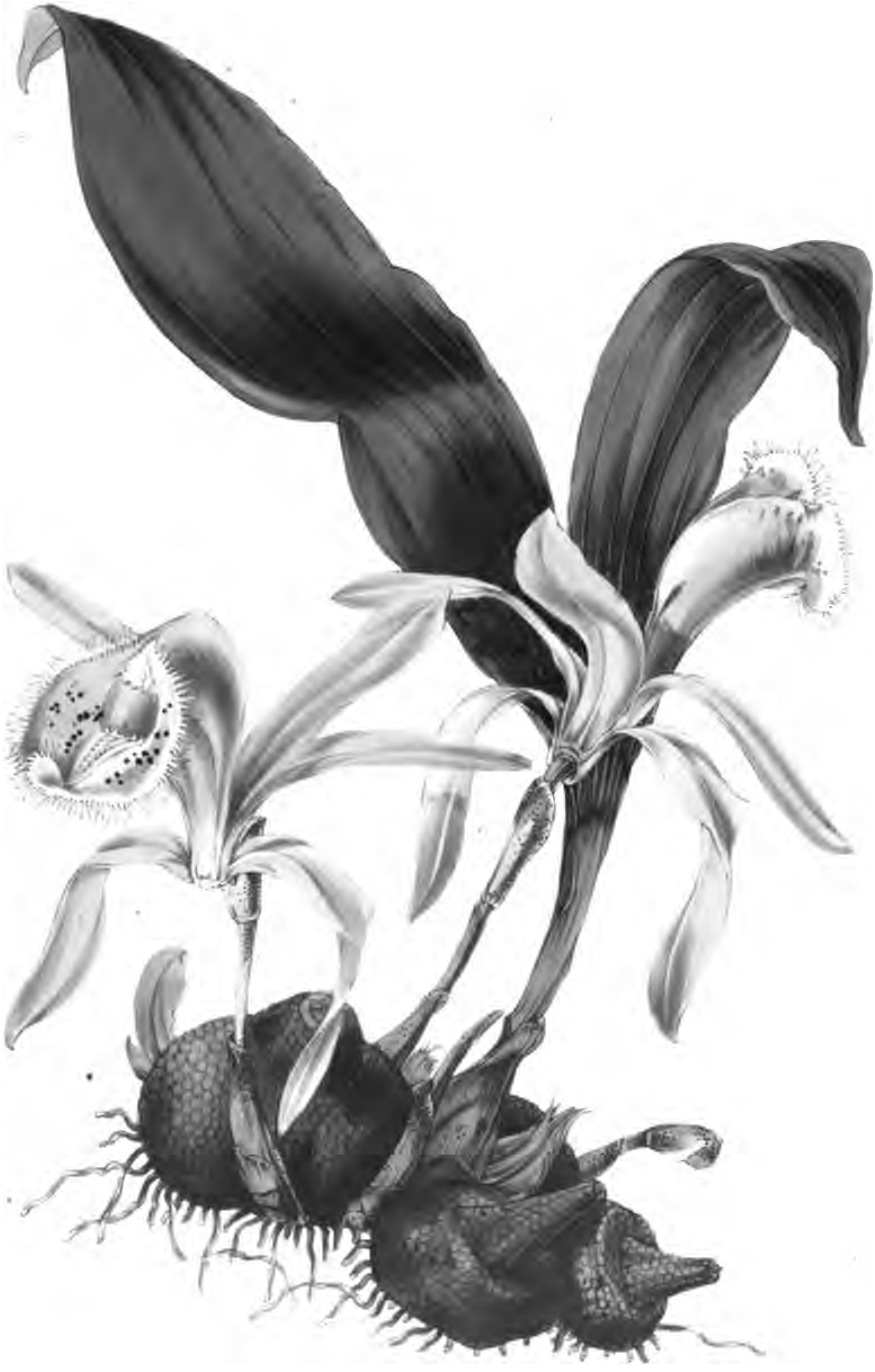
SPECIFIC CHARACTER.—*Plant* a tall, evergreen shrub. *Branches* tetragonal, very shrubby and glabrous. *Leaves* oval, acuminate, occasionally somewhat serrated, shorter than the petioles. *Inflorescence* tomentose, forming a terminal raceme or verticillate spike. *Calyx* dentated, with rather short triangular indentations. *Corolla* elongate, ventricose in the middle beneath, with obtuse lobes.—*Lindley.*

IT is no small tribute to the worth of this plant, to remark that it is a fit companion for the three fine associates with which it is introduced; and its merits justify any distinction arising from the association British gardens have received our subject through the Horticultural Society, by whose collector, Mr. Fortune, it was discovered shortly after his arrival at Chusan. He gave it the name it bears, and despatched seeds of it from China, in 1843. These were raised in the garden of the Society, producing plants that flowered in their conservatory the following year.

Buddleya Lindleyana may be regarded as hardy, although it is not so, correctly speaking. It will endure the rigour of our severer winters as an herbaceous plant, but cannot exist as a shrub, without protection. With this plant it has happened, as it often does with new ones, that it has been too indulgently treated. Many have planted it in a good situation, and in good soil, in the open air, where, under such favour, its growth has been rapid, the specimen becoming a tall graceful shrub, not flowering till late in autumn, and, therefore, liable to be destroyed by frost. Plants grown old, or in barren soil, blossom earlier, and continue increasing in beauty, up to the period they are overtaken by weather that prevents the further development of blossoms.

Our *Buddleya* is not very well adapted for forming an isolated specimen, in consequence of being very free and open growing; neither is it at all suitable for cultivation in pots. For the conservatory wall, or any similar situation, there is scarcely a more excellent plant. It may also be planted in shrubberies as *B. globosa* is, being as hardy, and a worthy companion to that species. The nature and extent of root-provision allowed to specimens planted against a wall, &c. must be regulated by the space their tops are designed to occupy. Layering or propagation by cuttings is a ready means of increase. Specimens obtained at the Horticultural Society's garden last summer, afforded the subject of our drawing.

The genus is named after an English botanist, Adam Buddle.



S. Holden del. & lith.

Cœlogyne præcox?

CŒLÓGYNE PRǼCOX.

(Early-flowering Cœlogyne.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

GENERIC CHARACTER.—*Sepals* connivent or spreading, free, equal, similar in colour to the petals. *Petals* occasionally resembling the sepals, but sometimes linear. *Labellum* cucullate, frequently three-lobed, with depressed streaks or crests. *Column* erect, free, with a winged margin, expanding at the summit, or cucullate, with a two-lipped stigma. *Anthers* two-celled, covered, not divisible in the middle; inserted below the apex of the column. *Pollen-masses* four, free, inclining to one side, occasionally cohering.

SPECIFIC CHARACTER. — *Plant* an epiphyte. *Root* perennial, consisting of numerous simple fibres. *Stem* none. *Pseudo-bulbs* sessile, at first small and awl-shaped, clothed with beautifully veined scales imbricated in two ranks. *Leaves*, two from the summit of a bulb, later than the flowers, lanceolate, entire, plaited, ribbed, smooth, each tapering at the base into a footstalk. *Flowers* from separate bulbs, large, solitary, on shortish terminal, nearly upright stalks, each within a lanceolate membranous sheath. *Sepals* and *petals* lanceolate, acute, recurved, light purple, all nearly equal in length; sepals narrowest. *Lip* nearly as long as the petals, rolled up into a funnel-shape, externally purple, its taper base united with the bottom of the style, and a little protuberant, not embraced by the petals, its margin spreading, fringed, white; the inside marked with five longitudinal, rough, elevated yellow lines. *Capsule* obovate, with six furrows and three valves.

THIS species is a near relation of the charming *C. Wallichiana.* It inhabits a similar station in the East Indies, and principally differs in being altogether more robust, having paler coloured flowers and a much finer fringed labellum. Under culture it proves less delicate, requires similar treatment, but grows stronger and increases with greater freedom.

The *Cœlogynes* are among the most delightful of all Orchids, and of them none are more unique than *C. Wallichiana*, and three or four others closely approaching that species, which is probably better known than those to which allusion is made. Indeed one of them we are only acquainted with from the figure and account of it in Smith's "Exotic Botany." In that work its name is *Epidendrum pumilum*, and that of the plant now figured, *E. præcox;* but both must rank with *Cœlogynes*. *E. pumilum* has a lip "internally yellow, hairy, beautifully striped, and stained with red," is a native of Upper Nepal, but, as far as we are aware, is yet unknown in collections.

Cœlogyne præcox is also figured in the work above quoted, which has furnished our specific character, and has this account of the species:—"The plant in the annexed plate grows among mosses, on the trunks of trees, or on rocks, in Upper Nepal. Its name in the Nawar language, spoken by the subjected original natives of Nepal, is *Caybu Swa*." Messrs. Loddiges record that they possessed *C. præcox* in 1840, earlier than which period we question whether it existed in this country. It is not even now a frequent plant, and has flowered with very few. The small specimen represented, produced flowers in the collection of J. Allcard, Esq., Stratford Green, Essex, in November 1845. The foliage delineated shows its character, and the young growth of the plant; but the flowers and leaves do not appear together naturally.

The species should be placed to grow upon or in some material that does not very readily part with the moisture given, as the plant requires a liberal allowance, much shade, and to be placed in the cool part of the Orchid house, when growing. Its increase is effected in the usual way.

Cœlogyne is founded in allusion to the shape of the stigma, from *Koilos* hollow, and *gyne* a female.

PHENOMENA OF WINTER.

In the number of December last, at page 250, notice was taken of the error which—so far as horticulturists are concerned—prevails in ordinary calculations of the four quarters of the year. Winter, for instance, is supposed to begin on the shortest day, December 21. The weather that has been observed since the article referred to was penned, has, we should presume, experimentally proved that winter fairly commenced its reign by the 21st of November, in so far as concerns the condition of plants, then arrived at the period of their yearly torpor. The sun also is within six weeks of its lowest descent; and as on the 21st of December he begins to mount the ascending signs, beaming stronger light, and therewith blending the vivifying agencies of heat and electricity, can we for a moment longer retain a preference for an erroneous kalendar? The late frosts, which commenced about the 26th of November, continuing with few short intermissions till the 28th of December, prove to demonstration that winter was completely established, and had passed through more than half its course.

We regret that the few important observations we have to offer could not earlier meet the eye of the reader, for much remains to be done in the meantime. Still, in order to confirm the facts which it appears desirable to establish, we venture to say that, unless the frost continue, with snow, and become more intense, ere the first day of February * numerous evidences of the vivifying influence of solar energy will be presented to the lover of nature; buds will enlarge, even through the coldest weather; the earliest flowers will emerge, if not to bloom; the grass will assume a livelier hue, and, whether exposed or under glass, a manifest progress in vegetation will be discerned. As, however, those meteorological phenomena of winter—frosts, snow, sleet, are to be expected till the fourth week of February, we may fairly admit the existence of three winterly months, provided that we estimate its middle or depth to fall on the 21st of December. There will then be five or six weeks before that day wherein nature is declining unto its utmost torpor, and from five to seven weeks after the turn of days, during which the principle of life (at least in the roots) begins to awaken into activity. As, however, the morning sun is ever the most vivifying, it can be granted that the depth of repose may continue till the first week of January, for not till then does the sun rise more early by a single minute. Formerly our kalendars indulged in another error, and recorded an exact and equal shortening and lengthening of all the days. Of late years, however, the almanacs give correct time, and show that while the sun ceases to set later in the evenings by or about the 9th of December, he continues to rise later in the morning till the 26th, when, and for six succeeding mornings, the hour of his rise is 8 h. 9 m.

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* It will be observed, that the above observations were penned before the setting-in of the late frost; and that, owing to vegetation having suffered from the contingency there alluded to, the appearances indicated have not this year been witnessed.

The true period of the increments of solar influence may be dated from the 3rd or 4th day of January, and then the attention of the forcing gardener ought to be more and more roused. Our treatment of plants under glass must, of necessity, be regarded as artificial, since every ray is more or less obstructed or modified. The science of this branch of gardening, should therefore be conducted by observation and experience; effects should be closely attended to, results noted, and every reference to what is termed *nature* be abandoned, unless it simply consist of a geographical knowledge of the situation, climate, and general or mean temperature, and its extremes, in the native climes. *Glass* exerts a novel and modifying influence, upon every concomitant of plant culture; the constitution of the subjects within a forcing-house, is affected with respect to the nature of the heat, the light, the condition of artificially-raised moisture within the building, whereby also the transpiration from the oscular pores of the leaves is variously affected; and here, at this very point, we beg to offer, with all due respect for authorities, the suggestion, that most of the theories concerning the absorption of gases by the leaves, the transpiration of oxygen, the decomposition of carbonic acid, and the fixation of deposited carbon in the organism, (when founded upon experiments made only in unnatural situations, under glass, in close vessels, and in circumstances foreign to those of nature), cannot be deemed conclusive. Such theories remain subject to doubt, inasmuch as they lead to no certain knowledge whatsoever of the phenomena, that result from the energy of the great natural agents, exerted under circumstances perfectly and purely natural.

Every one ought to observe, and study the influence of light, during the recession and gradual advance of the sun; the chemical colouring and attractive influences are distinct, and although we may never discover the modes in which the components of light act, yet, being sure of the effects, it is very possible to trace their progress.

We now cannot further dilate, as it is required to take a cursory view of the agency of artificial heat, at a season when the economy of means is of the more consequence, inasmuch, as that implies also, the most perfect combustion of the articles employed. We will "begin at the beginning," and extract a few passages from the inaugural Lecture, delivered very lately by Dr. W. A. Miller, at King's College, which is reported in the *Pharmaceutical Times* of December 19th and 26th. "When a pound of charcoal" it states "is burned, when it combines with oxygen from the air, it gives out a certain amount of heat, which, from careful experiment, appears to be sufficient to convert thirteen pounds of water at 60 degrees—the ordinary temperature of the air—into steam at 212 degrees, the boiling point of water: in other words, it will boil away thirteen pounds of water; and more than the heat sufficient to effect this, no ingenuity can make it furnish." Here the amateur reader, who possesses hot water pipes or channels connected with a boiler, might, with great advantage, calculate the net contents of his machinery in gallons, and the bulk or weight of the carbonaceous material consumed to bring the water to a given heat. If *charcoal* be the type, although that substance cannot, in general, be employed, yet clear burning coke may; and *must* be used in the cylindrical boiler. From these data, though it cannot be expected by any one of us, that the great power of heat above mentioned, will ever be developed by even the best acting furnaces which we as yet possess, a comparative approximation can be attained; or the defect of heat may be so apparent as to prove the value of the one, or the worthlessness of the other. Suppose, for instance, that 50 or 52 lbs. of coke heat 600 gallons of water to a very efficient forcing power, while in another apparatus the heat developed by the same fuel is very much lower. In these cases, although it can never be presumed that the better of the two boilers will command the entire heat which the combustible can develope, yet it will be evident that the more defective boiler being the cause of a daily and injurious loss, demands the substitution of one differently constructed; or, at least, that the present be differently placed. We have never as yet seen a more powerful furnace than the one described in a former number under the term "Saddle-boiler."

Dr. Miller proceeds—"Some waste is almost inevitable," and "the first and most obvious loss, arises from the escape of the heated air from the chimney, before it has surrendered to the boiler the full amount of heat which it is capable to relinquish. It is manifest that the best method of obviating this, consists in so arranging the chimney and passages for the products of combustion, that they shall circulate thoroughly around the boiler, and that sufficient time may be allowed for them to part with their high temperature before escaping into the open air." These are plain facts, which have been often noticed, but found difficult to accomplish. However, the cylinder boilers, wherein the fire is confined to the inner case, is evidently defective, because the flame does not touch the external surface, but passes off over the upper rim of the boiler at once into the flue; as a remedy, the flue should be continued within the house, so as to confine and radiate all the heat possible.

Other boilers, wherein the entire centre contains the fire, and which force all the flame to pass over the top, and around the outer sides of the plates, must be vastly more efficient; but still there remain defects, and one of these, of very considerable moment, is thus noticed in the lecture. The knowledge of this, and the remedy for it, "is intimately connected with the chemistry of combustion. It depends upon an insufficient supply of air. It is a fact not less singular than important, that charcoal or coke may be dissipated in vapour, and may apparently be wholly consumed, by one half of the amount of air that is usually required in an open fire, under circumstances where the full quantity of heat is given out. This depends upon the property which charcoal has of *forming two compounds with oxygen:* in the first case, where the most heat is emitted, twice the quantity or amount of oxygen is taken up, and carbonic acid or 'fixed air' is produced: in the second case, a gas is also obtained, called *carbonic oxide;* it is colourless, and therefore escapes notice; but it is combustible, which carbonic acid is not, and in burning it gives a large amount of heat—in short, the other four-fifths of the heat, which are deficient when charcoal is burned into this gas." In common furnaces, this gas is formed by the union of the heated coal or coke with the carbonic acid, first produced by the direct union of the most heated portion of the fuel, with the oxygen of the air. "These furnaces are usually open to the air at the bottom by the bars of the fire grate, brisk combustion takes place, and the body of the coke above becomes of a bright-red heat; but the air is quickly deprived of its oxygen by the lowest layer of coal, the draught carries up the exhausted air, and with it the carbonic acid that has been formed; this gas, as it passes over the ignited coal, dissolves a fresh portion, cools the fire, and ascends the chimney."

Thus, then, admitting the full force of this statement, a very great proportion of the actual body of the fuel, is dissolved in the carbonic acid, and carried off unconsumed, to the great loss of the concern. Now, where shall we find a remedy for this unsuspected evil? The chemist could easily suggest one, by the introduction of a greater supply of oxygen, or fresh air, among and over the ignited body; but great nicety of adaptation must be employed, for while one evil was obviated, another, in the melting and clinkering of the coal into a solid and most unmanageable mass, might be dreaded. However, the quality of the coal (the *Moira* is capital) may obviate much of the evil.

Dr. Miller next alludes to the combustion of *coal* instead of coke or charcoal; in which he says, "Still greater loss is here sustained, because all the *visible smoke* is wasted, a good deal of carbonic oxide passes off in the invisible form, and still more *coal-gas* escapes unnoticed; the coal in the upper part of the furnace becomes coked, by the heat of the lower portion, and nearly all that the gas-works obtain, by the distillation of coal in retorts, here passes unheeded into the air."

This is unfortunately true to the letter; witness the volumes of smoke which are poured into the air from every shaft, where pure coal of any kind is employed, as the heating material. Dr. Miller denounces the evil as a nuisance, mischievous to health, and adverse to economy; but he points out no remedy. Here, then, the writer must again urge the importance of a jet of steam as the only effectual remedy. Could the boiler be made to boil the water, a skilful machinist would find little difficulty in adapting a cast-iron jet pipe, to terminate in an expanding rose pierced full of small orifices; but as the constant return of cooler water, keeps that within the furnace below the boiling degree, the arrangements must become more complicated.

Since the foregoing was written, and just at bringing this article to its close, a newspaper, writing on the "smoke nuisance," gives a notice, from Liverpool, that a remedy had been found, and adopted: the paper is not at hand, and, therefore, we can do no more than allude to the fact; it, however, brings to mind that a very observant person assured us, he *had* witnessed the immediate and total destruction of smoke, from some furnaces in Scotland, by merely turning the stop-cock of a tube, which conveyed a rose-jet of steam over the surface of the burning coal. The Liverpool article did not describe the agent *or* the machinery employed.

These hints will, we trust, induce thought and contrivance, for whatever the present difficulties, their removal would be amply compensated by the economical retention of even *two*, not to say *four* fifths of the heating power of the combustibles.

ON THE CULTURE OF ORCHIDS.

In our principal Orchid-house at Chatsworth—a large erection, long and wide, with a curved, ridge-and-furrow glazed, lean-to roof—we have spaces which, excepting the room allowed for paths, constitute the whole back portion. This part of the house is now, with a trifling exception, devoted to Orchids planted out. Making plantations of the family, is attained by the plants being massed together, and associated in clumps of various sizes, with a variety of kinds in each clump. The masses are planted in soil, and almost exclusively in soil of a particular description. But first a few words on the supports provided for the roots. That material is wood—"blocks" the separate portions are termed with us. The majority of pieces are roots, of various dimensions, when the shell, or casing of "sap wood," which was originally their outer portion, has gradually decayed and disappeared, leaving a chunk of "heart," seasoned and hardened wood, the most suitable that could be imagined for the purpose. Oak is the best block in point of durability, and as presenting grotesque forms appropriate to the character of the Orchid family, besides being a material to which the roots of Orchids are partial. Other "blocks" are scraggy pieces of the trunks of gnarled and distorted trees, and always of Oak, when that wood can be obtained. These "blocks" are often of an oblong shape, and are then easily fixed for use; one of their ends only requiring to be made smooth, to elevate and otherwise enable them to stand in an upright or slanting position, on a flat surface. Brickwork or wooden pillars are sometimes necessary, to enable them to be properly arranged and secured. But these are particulars about which little can be said, as circumstances of a strictly individual character regulate such minor details; so also do circumstances, conjointly with the taste of individuals, the disposal of the blocks as a whole. The main part of ours are so arranged, that they represent a sloping, undulated bank; and a very interesting and original effect they have, in the situation they occupy. So far, what has been written relates entirely to "blocks."

Of the soil employed, attaching it to the "blocks," planting, &c., we may next treat. The soil is a kind which abounds to a considerable extent in the neighbouring woods of Chatsworth, and is remarkable for the quantity of fibre which enters into its composition. The whole is vegetable matter, and chiefly consists of the fibrous roots of common Ferns, the annually decaying vegetation they put forth, and the decomposed leaves of various deciduous trees. A peaty matter, naturally formed by the ingredients here enumerated, is what we find the majority of Orchids succeed in, better than they do in anything else we have employed. But it is by no means the only soil in which the greater part will flourish, nor the material alone, placed on "blocks" for those to root into which have been planted out. In attaching soil to the "blocks" and securing it there, small copper wire and nails have been in requisition; but "blocks" are sometimes met with that do not require the assistance of those articles, being easily provided with a sufficiency by pressing fragments of the very turfy peat in their miniature chasms, hollows, and crevices. Some there are, too, whose general surface is nearly horizontal, and therefore can be furnished, by ranging slices of soil round their outside, to support what is laid on the surface. The most important point to keep in view in this operation is to preserve the romantic appearance of the "blocks," individually and collectively, and that they are not hidden by their inequalities being filled up with soil. Any measures that are taken to fasten the soil on the "blocks," is only necessary as a temporary process, for eventually the roots of the plants wholly occupy the soil, escape through and from it to the wood, and there cling so tenaciously that the whole mass is firmly held on by them.

Little need be said of planting, that part of the business being a simple affair, and easily accomplished. Small specimens and parts of plants should be selected, to occupy the "blocks," in preference to large plants, and those which have a bulky mass of roots, principally, because those with an unwieldy bundle of the latter organs, are difficult to dispose of in a nice manner, in so comparatively small a space as a "block" affords. Care should be taken, too, as well in putting Orchids on "blocks" as placing them to grow in pots or baskets, that they are not planted too deep. If the roots are sufficiently covered to keep the plants steady till they become established, and to give them a tidy appearance, nothing further in the way of planting is required, except that fine copper wire may be passed a few times among the plants over the soil to keep the latter compact and secure till they have got hold by their roots. The whole mass of soil on each "block," after the planting is completed, should have a thorough soaking of water before any part of it becomes settled and dry, and therefore almost impervious to wet; but afterwards moisture must be applied cautiously, for peaty soil, it is well known, when once wet, parts with its moisture as reluctantly as it receives it when very dry.

It has been mentioned that the soil used at Chatsworth, is not the only material placed with Orchids on "blocks," for them to root into. Living common mosses, chiefly the more finely organised kinds, are also employed, and found to afford a most agreeable medium for their roots, and, as they grow and flourish a long time, give a very interesting and highly natural aspect to the "blocks" on which they are wholly or partially put, to answer the purpose of soil. Some of the British mosses, tender *Lycopodiums*, *Tradescantia zebrina*, &c., are delightful, growing here and there on particular "blocks," or stuck appropriately over the whole mass. Many exotic, and some British ferns too, are equally pretty when thus disposed; but everything of this nature, so planted, will require to be kept properly under, as they usually grow so rapidly as to smother the legal occupants.

It has not been thought desirable to use the more choice Orchids in this plantation; but *Cœlogyne Gardneriana, Anæctochilus setaceus, Trichosma suavis, Miltonia spectabilis, Oncidium Lanceanum, Stanhopea tigrina, Odontoglossums, Dendrobiums, Cymbidiums, Lycastes, Zygopetalums, Bolbophyllums,* and a host of other genera are included, and the largest measure of success has attended the experiment. It is remarkable, that the highest degree of temperature any of the plants which have flourished so well, experienced, has been that which a close greenhouse usually affords, and many have grown and flowered admirably in the atmosphere and temperature of a close cold pit. Another thing made evident by these turned-out plants, is the fact of how thoroughly Orchids delight in shade. Many plants among those which succeed best, grow under a roof whose frame-work is of the old-fashioned material, wood, and many feet beneath it; and in addition to the shading the whole house is further screened from light, by a heavy framing of rough timbers, poles, &c., erected inside the structure, for the purpose of hanging plants growing on baskets and small blocks. The plants alluded to are of a deeper green, by only enjoying a greater degree of shade than their fellows; their roots being always healthy, and not so often subjected to alternations of drought and extreme wet. Specimens on "blocks" can be kept quite dry or "starved" at pleasure, just as those under other circumstances can; and those we have been writing of are quite out of reach of bottom-heat—a fact much deserving mention, though one that had almost escaped observation.

Where Orchids are cultivated for the love of the family alone, "block" planting should be resorted to; for it not only is highly favourable to the welfare of the plants, but enables them to be grown in the most natural and interesting manner.

If their increase and progress for the purposes of commerce is the object, then planting them out on "blocks" is also well adapted for the end in view, since under no system of culture do they so rapidly multiply in size, and admit of separation, as when thus grown.

Lastly, growing Orchids "on blocks" can be practised where it is desired to publicly exhibit them, because no individual could on reasonable grounds consider an exhibition specimen all bloom, all perfection, less lovely, splendid, or noble in consequence of its growing characteristically on a rude "block" of wood, perhaps in company and contrasting with half-a-dozen others quite as much in perfection.

THE CULTIVATION AND MANAGEMENT OF THE GENUS CLERODENDRUM.

THIS is one of those delightful tribes of plants which form such a striking feature at the Metropolitan Exhibitions in June and July, and it is to the enthusiastic perseverance of those cultivators, who contribute the miscellaneous collections of plants, at these annual exemplifications of floricultural skill and progress, that the public are indebted for a proper knowledge, of the management of this splendid genus.

The different species of this tribe of plants bloom at various seasons; some during the summer and autumn months, while others enliven our stoves with their gaudy or delicate flowers, at a time when the chill blast of the "Ice King," make their charms the more acceptable.

The *Clerodendrums*, or "Glory-trees," are principally natives of warm climates, such as the East and West Indies, Africa, &c., while some few of them are from China, New South Wales, and the temperate regions of Nepaul; but fortunately, though most of them require a high temperature during the season of growth, they will bloom from May until October in the atmosphere of a warm greenhouse, and hence they come within the management of every person, who can command the temperature of a dung-pit, or a Cucumber-bed, during their season of active growth. In fact, whoever can grow a Cockscomb or Balsam, may also grow the *Clerodendrums*.

Many persons imagine, probably from seeing the large specimens at the exhibitions, that these plants require a great deal of room; but it will be gratifying to our amateur friends to know, that several of the finest species, as *C. fallax*, and *fallax superbum*, *squamatum*, *splendens*, and even *paniculatum*, may be bloomed with very considerable success, in even six and eight-inch pots, and if they are not started too early, will continue to enliven the greenhouse from June to November, or even later, if they are kept in a growing temperature; and at the latter season, their flowers come in very acceptable for making bouquets.

In addition to the imported species, some very beautiful varieties have been raised in this country, so that it is no uncommon thing to hear a cultivator remark, when he sees an indifferent specimen, "Ah, you have got the bad variety;" so that purchasers will see it is important they should be particular in what they buy. The finest kind which we have seen is *C. fallax superbum*, a variety raised, we believe, by Mr. Barnes, the clever gardener of G. W. Norman, Esq., of Bromley, and it is remarkable for producing, in addition to a fine terminal or central panicle of bloom, a number of smaller side panicles, varying in number from ten to thirty, which, under good management, generally furnish from the pot upwards, and form a compact and very beautiful specimen. Those who are about commencing the cultivation of these splendid plants, will do best to apply to a respectable nurseryman, and procure the following kinds:—*C. fallax*, and *fallax superbum*, *speciosissimum*, *squamatum*, *paniculatum*, *infortunatum*, and *Kæmpferi;* to which, if they can be procured, may be added *C. Hugelii*, *hastatum* as a curiosity, *fragrans* and its double variety, with the white *fortunatum*, and most certainly the trailing species, *C. splendens*, of which there are two varieties, one with much darker flowers than the other, and more profuse in its habit of blooming.

Supposing these kinds to have been procured, and that they are nice dwarf plants in small pots, on the first of March we will make provision to commence their growth; and for this purpose a pit or frame must be prepared, in precisely the same manner that it would be prepared for cucumbers or melons, by getting it to a sweet atmospheric temperature of from sixty to seventy degrees, and with a good brisk bottom-heat.

Over the bed, after the frame is put on, place cinder ashes two or three inches thick; and as soon as these are warm, all will be ready to commence operations. Those who cultivate by the more fashionable method, of hot water and tanks for bottom-heat, will do well to take a hint from the preceding; for after all has been said, there is no atmosphere in which all soft-wooded stove plants, and many of the hard-wooded ones also, will grow so well as in that produced by the decomposition of fermenting materials; and hence, if the tank is used, it will be advisable to take advantage of some well-prepared dung, to improve your atmosphere a little. In the opinion of some first-rate practitioners, and after trying all the various plans recommended, the perfection of heating, for vigorous and expeditious plant-growing, is a good system of hot water, combined with a well-managed dung lining.

All being in readiness, provide a compost of the following materials:—three parts well-prepared fibrous turfy loam, one part turfy peat, one rotten cow-dung, with a handful of charcoal, broken to the size of horse beans, and sufficient white sand to keep the mixture free and open. Then take some eight-inch pots, and drain them with charcoal; turn the plants out of their pots; and if the roots are at all matted, open them out a little with a fine-pointed stick, and pot them into the prepared pots, using the compost as rough as possible, and be careful not to consolidate the soil too much; give them a little warm water, place them in the pit or frame, and draw some of the ashes round the bottoms of the pots, to give a little additional bottom-heat; but take care that the bottom-heat does not become too strong. Keep the frame at a temperature of 70 degrees during the day, with plenty of air, and endeavour to keep a little air on also during the night, so that the heat does not fall below 60 degrees. The plants will require shading for a few days during bright sunshine, and indeed it will not be a bad plan to throw a thin shade over the plants every day for a few hours, as the leaves, being very large, are liable to burn under an unclouded sun. Cold draughts must also be guarded against, as they too are very liable to injure the tender foliage. In the management of the pit or frame shut up early in the afternoon, so as to command a good growing temperature of 80 or 90 degrees, but give a little air at the time of leaving for the night, so that the thermometer may fall to 60 or 65 degrees before the following morning. Follow this treatment daily, taking care to secure sufficient head-room for the plants in the frame, and keep a sharp watch upon the red spider, which is very partial to these plants.

In a fortnight or three weeks from the first potting, they will require a second shift, at which time eleven-inch or larger pots may be used, draining them with oyster-shells and lumps of charcoal, and using the compost as rough as possible. Return them to the pit, preserving the same treatment as before, until the pots are again well stocked with roots, after which time it will be advisable to stimulate them a little by some liquid manure. The best way to prepare this, is to take two pecks of sheep or deer's dung, one peck of soot, and one fourth of a peck of Potter's Guano; place these in a large tub and mix them into a paste with ten or twelve gallons of boiling water, then fill the tub up with sixty or seventy gallons of rain-water, and stir the water repeatedly for several days; at the end of that time take the scum off and throw in three or four lumps of lime, and you will have a fine clear manure as clear as old ale. In using this, dilute it with half its quantity of clean water, and use it of the same temperature as the place the plants are growing in. This water is used for watering twice or thrice a week in clear weather; and on days when we do not water, we frequently sprinkle our pits and houses with it, and with the best effects.

If the plants grow properly, they will be fit to shift into their blooming pots by the middle or end of April, and of course the size of the pot for this final shift must be governed by the kind and size of the plants and convenience of house-room. We generally bloom one specimen in 13, 15, or 18-inch pots, but we have had very nice compact plants in eleven-inch and even smaller pots.

After the plants show bloom, great care must be taken that they sustain no check, or the panicle may be deformed or much checked in its progress, but if they are kept regularly and vigorously growing, a panicle of from two to three feet six inches long may be insured from *C. paniculatum*, and with its large and wide-spreading foliage we know no finer object. Remove the plants into the greenhouse as soon as they are fairly in bloom, and they will continue to bloom until the end of the season. After the flowers begin to fade, the plants must be gradually dried off, so that they remain quite dry during the winter. In the spring cut the plants down to two or three eyes, remove the old soil, reduce the roots, and repot them into fresh compost, and start them as in the preceding spring. *Clerodendrums* may be propagated by cuttings of both the old and young wood, planted in very sandy soil, and plunged in a brisk bottom-heat of dung. They may also be increased by seed, which some of the kinds produce very freely, and it may be sown either in the autumn as soon as gathered, or any time during the spring months. *C. splendens* may be increased either by cuttings or budding, or by grafting on the roots of the stronger growing kinds. This is a trailing variety, and requires to be trained to a fancy trellis, or it may be planted out and trained up the rafter of the plant stove, where it will produce a profusion of flowers for nine months in the twelve. This species should not be cut in so close as the shrubby kinds; if it is spurred in to about three buds on each lateral branch that will be quite close enough. As these are plants which delight in a moist atmosphere, care must be taken to syringe them as frequently as possible during the time they are in a growing state.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR NOVEMBER AND DECEMBER.

Aca'cia mœ'sta. Dr. Lindley states :—"For a specimen of this plant we are indebted to an anonymous correspondent of the *Gardeners' Chronicle,* from whom it was received in April last. Upon submitting it to Mr. Bentham for his opinion, we were favoured with the following memorandum :—'The *Acacia* is so very close upon some of the broad short-leaved forms of *A. verticillata,* that although it is very different from the common forms, I know not how to characterise it as distinct. It is an extreme of my var. *latifolia,* such as I have seen before, and intended to make a species once, till I got hold of a set of intermediates from that to *A. ruscifolia* of *Botanical Magazine;* and from this to the common form intermediates are frequent enough.' Notwithstanding this high opinion as to the plant being a mere variety of *A. verticillata,* we are induced to separate it, because its leaves are not verticillate, nor narrow, nor spreading, and because of its singular dull or even black-green colour."—*Bot. Reg.,* 67.

Campa'nula no'bilis. "This species has been introduced from China, by the Horticultural Society, whose Journal states :—'The root-leaves of this fine herbaceous plant are deeply heart-shaped, of a bright pale green, and placed on footstalks from six to nine inches long, forming a large tuft. From among them, and to rather more than twice their height, rises the flowering stem, which branches a little at the bottom, and bears upon its divisions several fine nodding flowers, which seem to be the largest yet seen among the genus *Campanula.* They are something like those of *Canarina,* nearly three inches long and one and a half in diameter. The corolla is pale purple on the outside, and nearly smooth but paler within, abundantly sprinkled with bright purple dots, and closely covered with long delicate horizontal hairs.' A hardy plant."—*Bot. Reg.,* 65.

Ca'ttleya Ski'nneri. "No colour that we can employ does justice to the brilliant rosy hue of this flower, justly named by Mr. Bateman in compliment to its indefatigable discoverer, Mr. Skinner, who detected it exclusively in the warm parts of Guatemala, and along the shores of the Pacific. It is described by Mr. Skinner as 'inhabiting the hot damp coasts,' and as 'a plant that will require treatment accordingly. It is always found on very high trees, and is most difficult to get at, except after a storm that may have chanced to have thrown down some of the largest forest trees.'"—*Bot. Mag.,* 4270.

Cle'matis tubulo'sa. "A handsome but singular-looking *Clematis,* with an upright, slightly branched stem, long petioled leaves, and clusters of blue flowers. These leaves have rather the appearance of some *Acteæ.* It is a native of Northern China, and has flowered in the greenhouse of the 'United Gardeners' Nursery Society,' King's Road, Chelsea, under the care of Messrs. Weeks and Day, whence it was obligingly sent, in great beauty, by Mr. Makowski."—*Bot. Mag.,* 4269.

Cœlo'gyne ochra'cea. "The specimen from which the annexed figure was taken," Dr. Lindley writes, "was supplied by Thomas Brockelhurst, Esq., of the Fence, near Macclesfield, in April last. Its pure white flowers, with bright orange-yellow blotches on the lip, are very pretty; and they are moreover extremely sweet-scented. We possess the plant from several localities among the late Mr. Griffith's valuable Indian collection. Darjeeling, Bootan, and the Mishmee hills all produce it. With the Mishmee specimens we have a note from its lamented discoverer, stating that it is common on Thummathaya and Zaimplang-thaya. These specimens differ a little among each other in regard to the amount of toothing present at the sinus of the lip, and as to its exact form ; but they all belong evidently to the same species."—*Bot. Reg.*, 69.

Escallo'nia Organe'nsis. "A lovely shrub, which will probably prove hardy, first detected in the Organ Mountains by Mr. Gardner, and about the same time by Mr. Wm. Lobb, whose seeds, sent to Mr. Veitch, of Mount Radford Nursery, Exeter, produced the plant from which this representation is taken. The stem and branches are of a rich red brown, extending to the calyx ; the leaves have their mid-rib in part, and the serrated margins red, and the petals are deep rose colour. Mr. Lobb's plant has the leaves narrower than in Mr. Gardner's specimen, but that is the only difference between them."—*Bot. Mag.*, 4274.

Heliophi'la tri'fida. A plant stated to be natural to sandy tracts near Cape Town, in the neighbourhood of Doornhoodge. "In our gardens it proves to be a very pretty, half-hardy annual, requiring to be grown in a mixture of sandy peat and loam, to which should be added a small portion of well decomposed leaf-mould or rotten dung. The seed should be sown about the end of February, in pots, and raised in a close pit or greenhouse, and treated like other half-hardy annuals. When the plants are sufficiently large, they should be transferred to other pots, not more than three or four plants being placed in each pot. It produces its gay ultramarine blue flowers from June to September in the greenhouse, and grows about a foot in height." Raised from seeds obtained at Hamburgh in the garden of the Horticultural Society. Synonyme *H. pinnata.*—*Bot. Reg.*, 64.

Impa'tiens Platype'tala. "There does not appear to be any description of this charming Balsam, which belongs to the small division of species having whorled leaves. It is most nearly allied to *I. latifolia*, or at least to the plant distributed by Dr. Wight under that name (451), but that species has a shorter and thicker spur, long fringe-like glands at the base of the leaves, and a good deal of yellowish hairiness, especially on the young shoots and ovary. The *I. latifolia* of Linnæus is said to have alternate leaves." Noticed at page 142 of last volume as "Balsamina spes."—*Bot. Reg.*, 68.

Lyo'nia Jama'icensis. From the high mountains of Jamaica, where it was first detected by Swartz, and it has since been sent to us by Dr. M'Fayden and Mr. Purdie. "Mr. Linden finds it in Jamaica, and it is n. 1694 of his collection from that country. It flowers copiously in June and July in a cool frame, and only requires to be kept from frost in the winter. We are indebted for the living plant to Mr. Mackoy of Liege. I have ventured to unite the *Andromeda fasciculata* of Swartz with this, for the differences described in the two are no more than are evident on slight varieties of the same plant. The flowers are extremely delicate, semi-transparent, and of a waxy appearance ; they are, moreover, fragrant with a honey-like scent." A moderate-sized shrub, with spreading branches and alternate ovate-lanceolate leaves, from whose axils spring short racemes of white or nearly white flowers. Synonyme, *Andromeda Jamaicensis.* —*Bot. Mag.*, 4273.

Odonto'glossum hastila'bium. "A truly lovely Orchideous plant wholly new to our living collections, but known to Dr. Lindley through Linden's specimens of New Grenada. Sent to Kew by our collector, Mr. Purdie, who gathered it in woods on the route from Santa Martha to the Sierra Nivada. Linden detected it in the province of Pamplona, at an elevation of 2500 feet. The flowers are numerous on the raceme, large, handsome, elegantly varied with pale green, purple and white, and moreover highly fragrant. Our drawing was made from the plant at Syon Gardens, where the species blossomed in August 1846."—*Bot. Mag.*, 4272.

Scutella'ria Ventena'tii. Sir William Hooker writes :—"We have here the pleasure to figure a still more beautiful *Scutellaria* than that represented at our Tab. 4268 (*T. incarnata*), to which we there alluded, with far richer coloured flowers, and in other respects a good deal resembling it. Indeed we have already in that description, given it as our opinion that Ventenat had confounded this plant with the *incarnata*. They are, however, truly distinct from each other, as indicated by the above characters, and from *T. coccinea*, H. B. K., in the cordato-ovate and serrated (not oblong and entire) leaves. The present species was detected in the mountains near Santa Martha by Mr. Purdie, and seeds were sent home by him in 1845, which were reared in the summer and autumn of 1846. It has been treated as a greenhouse plant, but would doubtless flourish and prove highly ornamental to our flower-borders." The flowers are borne in terminal racemes and have corollas of a bright, deep scarlet colour.—*Bot. Mag.*, 4271.

STENOCA'RPUS CUNNINGHA'MI. "So long ago as 1828, the lamented Allan Cunningham discovered this plant on the banks of the Brisbane River, Moreton Bay, with other interesting novelties, described by him in the 1st vol. of the 'Botanical Miscellany;' such as *Grevillea robusta*, *Oxleya xanthoxyla*, *Castanospermum australe*, *Gyrostemon attenuatum*, *Acrostichum grande*, *&c.* Not, however, meeting with the subject of our present plate in flower, he took no further notice of it in his journal than to remark, states Sir W. J. Hooker, (as I am kindly informed by Mr. Heward,) 'that it is a slender tree, of most remarkable habit; with leaves large, from the extremities of the branches, glossy and lobed, or laciniated; without flower or fruit. No. 193.' Had he seen its blossoms elegantly arranged in candelabrum-like umbels, clothed with the most vivid orange-scarlet silky pubescence, he would assuredly have ranked it among the most important of his numerous additions to the Australian Flora. Two rooted plants were sent home and cultivated with great care by Mr. Smith, (from which all others in the country have had their origin); but although they have attained a height of sixteen feet, he has never been rewarded by seeing them blossom; nevertheless, he rightly suspected the tree to belong to the family of *Proteacea*. This idea is confirmed by some fruits, (destitute of seeds) which I received in 1843, from T. Bidwill, Esq., who gathered them in the same locality; and from this fruit, Mr. Brown pronounced the plant to belong to the genus *Stenocarpus*. For fine flowering specimens I am indebted, in August, 1846, to the kindness of Messrs. Weeks and Day, from the greenhouse of the 'United Gardeners' Society,' King's Road, Chelsea; and I learn from Mr. Makowski, of that establishment, that its blossoming is considered to be owing to the plant having been much cut in for the purpose of increase. The handsome evergreen, glossy foliage, has, indeed, long recommended this plant to the attention of cultivators, and now that its beautiful inflorescence is known, there can be little doubt but the demand for it will be in proportion to its loveliness. Mr. Smith remarks that it is a robust growing plant, and not, like many of the Proteaceæ, apt to die off suddenly."—*Bot. Mag.*, 4263.

SWAINSO'NA GREYA'NA. "A gay flowered, half herbaceous plant sent to the Horticultural Society by His Excellency Captain Grey, from the banks of the Murray, in New Holland, where it had been previously found by Sir Thomas Mitchell. It has dull brownish, hoary leaves, from whose axils a profusion of large purple flowers, with a white eye, appear in the summer." It will doubtless prove as useful as *S. galigifolia*, than which it is very much larger.—*Bot. Reg.*, 66.

TORE'NIA CO'NCOLOR. "This plant is probably regarded in herbaria as *T. Asiatica*; but living specimens forbid its union with that species. Its leaves are roundish ovate, or even cordate, and by no means ovate-lanceolate; their serratures are much smaller. The flowers have no side spots; and the tooth of the larger filaments is far shorter, and more blunt. Probably it is the same plant as was distributed by Dr. Wight, under the name of *Torenia Asiatioa*, No. 2205, while the true species is Dr. Wallich's No. 3953. In form of leaf it agrees with some of the specimens in Dr. Wallich's herbarium, called *T. cordifolia*, but referred by Mr. Bentham to *T. Asiatica;* they, however, have small flowers, and are probably something else." Noticed at page 166 of last volume.—*Bot. Reg.*, 62.

VA'NDA BATEMA'NNI. "The honour of discovering this splendid plant is due to M. Guadichaud, who met with it in the Moluccas; and introduced it to Mr. Cuming, who sent it from the Philippines; with Mr. Bateman it produced its magnificent flowers, in the stove at Biddulph Grange, in June and July last. It is a very large, erect plant, with remarkably thick aerial roots, produced after the custom of its kindred; sword-shaped, curved, two-ranked, hard leaves, averaging two feet in length; and a still longer spike of some score of flowers, each full two inches and a half across, flat, leathery and long enduring. But it is not alone for their size that these flowers are so especially worthy of notice. Their colour is indescribably beautiful. If you look at them in the face they are the richest golden-yellow, spotted all over with crimson; but when seen from behind, they are wholly a vivid purple, fading away at the edges into the violet of *Cereus speciosissimus*. So that, regard them which way you will, there is nothing but the gayest and richest colours to be seen."—*Bot. Reg.*, 59.

VICTO'RIA RE'GIA. To illustrations, and giving a detailed account, &c., of this magnificently grand vegetable production, Sir W. J. Hooker devotes the whole January number of his work, observing, "It has always been our endeavour to commence a new year in this Magazine with some eminently rare or beautiful plant; but never had we the good fortune on any occasion to devote a number to a production of such pre-eminent beauty, rarity, and we may add celebrity, as that now presented to our subscribers; worthy, as we have no doubt they will agree with us in thinking, to occupy the entire number. Seldom has any plant excited such attention in the botanical world; the interest being specially enhanced by the name it is privileged to bear.

"It is true that the *Victoria* has not yet produced its blossoms in England; but we have growing plants in the Royal Gardens of Kew, which germinated from seeds brought from Bolivia by Mr. Bridges. These have hitherto made satisfactory progress; although we have our fears that, the plant being possibly annual, and the season late (December), they may not survive the winter; or, at any rate, may not produce perfect flowers. We have, however no reason to despair of being able to raise the *Victoria regia*, and of seeing it bloom in this country.

"Although to our own country belongs the honour of first fully detailing, in 1837, the particulars relative to this extraordinary Water Lily, and clearly defining its generic distinctions, yet the earliest mention of it in print, so far as we can find, was in 1832, in a work to which we have not at this moment access, 'Feoriess's Notizen,' vol. xxv., p. 9. It is there described as a new species of *Euryale*, under the name *E. Amazonica;* so called by Dr. Poessig, from the circumstance of that distinguished botanist and traveller having found it in the Amazon River of South America.

"Previously, however, to this period, M. D'Orbigny, in 1828, sent specimens of this gigantic Water Lily to the Museum of Natural History in Paris. He had gathered them in the province of Corrientes, in a river tributary to the Rio de la Plata. The evident analogy between the foliage of this plant and that of Euryale induced the French botanists to rank it as a species of that genus. The dried flowers and fruit, which M. D'Orbigny had transmitted, were unfortunately neglected, and nothing remained of his specimens but a single leaf, of immense dimensions, and somewhat injured, which had been folded for insertion in the 'herbarium.' In 1835, M. D'Orbigny gave a notice of what he considered a species distinct from *V. regia* in his '*Voyage dans l'Amérique Méridionale.*'

"Thus much for the earlier discoverers and first notices of this magnificent aquatic; we shall have occasion to return to M. D'Orbigny; but, in the meanwhile, it is only justice to mention in this place that Sir Robert Schomburgk detected the plant in British Guiana, when travelling on account of the Royal Geographical Society of London, aided by Her Majesty's Government; his object being to examine the natural productions of that portion of the British dominions. The following account of this discovery was given in a letter addressed to the Geographical Society:—

"'It was on the 1st of January, 1837, while contending with the difficulties that Nature interposed in different forms to stem our progress up the River Berbice (lat. 4° 30′ N., long. 52° W.), that we arrived at a part where the river expanded and formed a currentless basin. Some object on the southern extremity of this basin attracted my attention, and I was unable to form an idea of what it could be; but, animating the crew to increase the rate of their paddling, we soon came opposite the object which had raised my curiosity, and behold, a vegetable wonder! All calamities were forgotten; I was a botanist and felt myself rewarded! There were gigantic leaves, five to six feet across, flat, with a broad rim, lighter green above and vivid crimson below, floating upon the water; while, in character with the wonderful foliage, I saw luxuriant flowers, each consisting of numerous petals, passing, in alternate tints, from pure white to rose and pink. The smooth water was covered with the blossoms, and, as I rowed from one to the other, I always found something new to admire. The flower-stalk is an inch thick near the calyx, and studded with elastic prickles, about three-quarters of an inch long. When expanded, the four-leaved calyx measures a foot in diameter, but is concealed by the expansion of the hundred-petalled corolla.

"'This beautiful flower, when it first unfolds, is white with a pink centre; the colour spreads as the bloom increases in age, and at a day old the whole is rose-coloured. As if to add to the charm of this noble Water Lily, it diffuses a sweet scent. As in the case of others of the same tribe, the petals and stamens pass gradually into each other, and many petaloid leaves may be observed bearing vestiges of an anther. The seeds are numerous, and imbedded in a spongy substance.

"'Ascending the river, we found this plant frequently, and the higher we advanced the more gigantic did the specimens become; one leaf we measured was 6 feet 5 inches in diameter, the rim 5 inches and a half high, and flowers a foot and a quarter across.'"

In addition to the foregoing intelligence respecting *Victoria regia*, the *Botanical Magazine* contains detailed particulars concerning it, translated from the "*Annales des Sciences Naturelles,*" in which work they were published by M. D'Orbigny, and from Mr. Bridges communicated to Sir Wm. Hooker. Mr. B. also supplied the specimens which enabled the latter gentleman to have the *Victoria* so finely portrayed, and clearly show it is entitled to bear the name it does, and which it received from Dr. Lindley.

Mr. Bridges states:—"The *Victoria* grows in 4—6 feet water, producing leaves and flowers which rapidly decay and give place to others. From each plant there are seldom more than four or five leaves on the surface, but even these, in parts of the lake where the plants were numerous, almost covered the surface of the water, one leaf touching the other. I observed a beautiful aquatic bird (*Parra*, sp. ?) walk with much ease from leaf to leaf, and many of the *Muscicapidæ* find food and a resting place on them." Native of many parts of South America. Synonymes *Victoria Regina*, *V. Cruziana*, *Nymphæa Victoria*, *Euryale Amazonica*.—*Bot. Mag.*, 4275-4278.

OPERATIONS FOR FEBRUARY.

Generally considered, what is now of importance is to see that the various collections and stores of plants for the flower ground are in such a state as to numbers and keeping, as will be afterwards required. If they are not, the process of manufacturing them, as it may be termed, should be commenced instantly. The less there is, however, of this business, now to do, the better for many reasons, the most practical of which is, that, with some slight reservations in favour of particular plants, those propagated in spring are not so well adapted for our purpose as if they had been raised and had got well established in autumn. All cuttings of the above class of plants placed to root, should be so favoured that they can strike as quickly as possible, and afterwards they should be encouraged to become strong and well rooted.

It is very desirable to prevent, as far as it can be done, all the various plants intended for the open ground, from wasting their energies in useless growth, before they reach their destination. Subjecting them to the lowest temperature consistent with their welfare, and giving as little water as possible, is doing a great deal towards effecting the object in question. Preparation to advance the above object should be made, by henceforth disposing of all plants occupying cold frames and pits, that will bear permanently placing, or be sufficiently protected by less complete shelter, thereby leaving those structures open to receive more tender things that may be too much favoured elsewhere.

Scarlet *Pelargoniums*, *Fuchsias*, *Salvia patens*, and such things, lifted from the flower-garden in autumn and arranged away in the rough manner—in almost every place—will soon begin to grow; a few or many of them, according to the demand, ought to be potted, or otherwise treated, that the formation of new roots and tops may be progressing. Some of the many strong shoots that often proceed in abundance are excellent to make plants for the parterre.

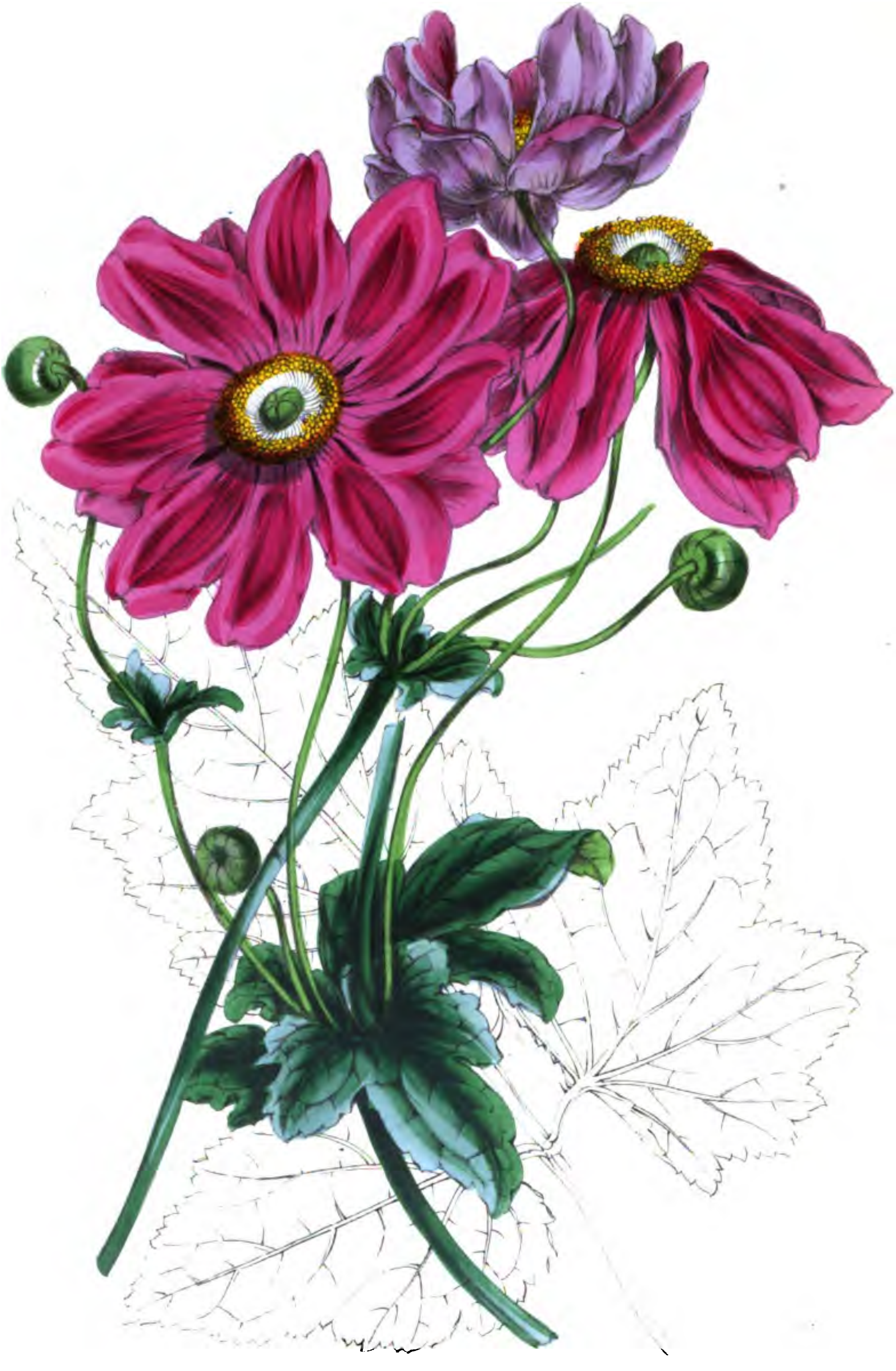
Do not allow the sowing of seeds of tender and hardy annual, biennial, and perennial plants, to be neglected this month.

In plant-houses continue the operation of giving increased root-room to their occupants. Commence surface-dressing, with new soil, manure, or leaf-mould, &c., as they stand in need. Prune, adjust, and permanently secure any climbers that require it. In all potting, let liberality distinguish your proceedings; use the freshest and best soil obtainable, not minding about its being very rich. Richness is easily given to soil in a liquid shape, and in that condition can also be made an ingredient at any time when plants most require its application. Clean pots should always be employed; they contribute in no small degree to the plants' welfare, and are necessary for the creditable appearance. Train and support new growth of plants, disbud them, and, above all, keep them free from insects. Syringing, giving air every suitable opportunity, watering and attention to providing a proper temperature for growing plants, must also be duly regarded.

Forced flowers are more beautiful, and as numerous now as they will at all appear. Every care must be taken of them, and due attention given to the every day increasing number of plants bursting into flower without assistance.

Out-door work is multitudinous at this season. Preparing old, or forming new, sites for flowers; pruning a variety of things; fixing climbers, trees trained against walls or fences, and the completion of planting shrubs and trees, is amongst the most prominent business. All planting should be finished without delay, if it is possible, and especially where the term includes the removal of large or considerable specimens. Never think the latter, when being removed, will suffer from kind treatment, or that tender dealing with them is labour thrown away. It is important to recollect this at all times. Towards the end of the month some half-hardy things may be put out. Climbers and other plants it is desirable to have in flower early, it is well to have in the open ground as soon as possible; but it is only really safe to place them there under comparative shelter, or where the latter can be easily employed. In shrubbery borders, or among miscellaneous groups of shrubs, introduce a plant or two of the generally well-known species of Adam's Needle (*Yucca gloriosa*), or something of that description. Such things, if they do well, produce an interesting and highly exotic effect. When thinning-out masses of shrubs, give prominence and abundant freedom to goodly specimens, particularly evergreens, that they may improve in beauty as well as increase in size. A few well-formed shrubs or trees, although comparatively so clustered together that they are not separate, are a much more gratifying object, and appear of greater importance than an extensive group allowed to ramble and grow into each other, wilderness fashion. Begin to get walks and lawns into a good state by commencing to roll regularly and by keeping them clean.

Pinks, Pansies, and similar things, standing over from last autumn in pots, should be planted out; and Pinks as well as Carnations may be put into pots in which they are intended to flower. The foliage of choice Tulips must be protected from cutting winds and sharp frosts, and Auriculas have a due amount of attention; they also must be protected from hurtful influences; but avoid exciting them.



S Holden del & Lith

Anemone Japonica.

ANÈMONE JAPÓNICA.

(Japanese Anemone.)

Class.
POLYANDRIA.

Order.
POLYGYNIA.

Natural Order.
RANUNCULACÈÆ.

Generic Character.—*Involucre* of three cut leaves distant from the flower. *Calyx* of five to fifteen petal-like coloured sepals. *Petals* wanting.—*Don's Gard. and Bot.*

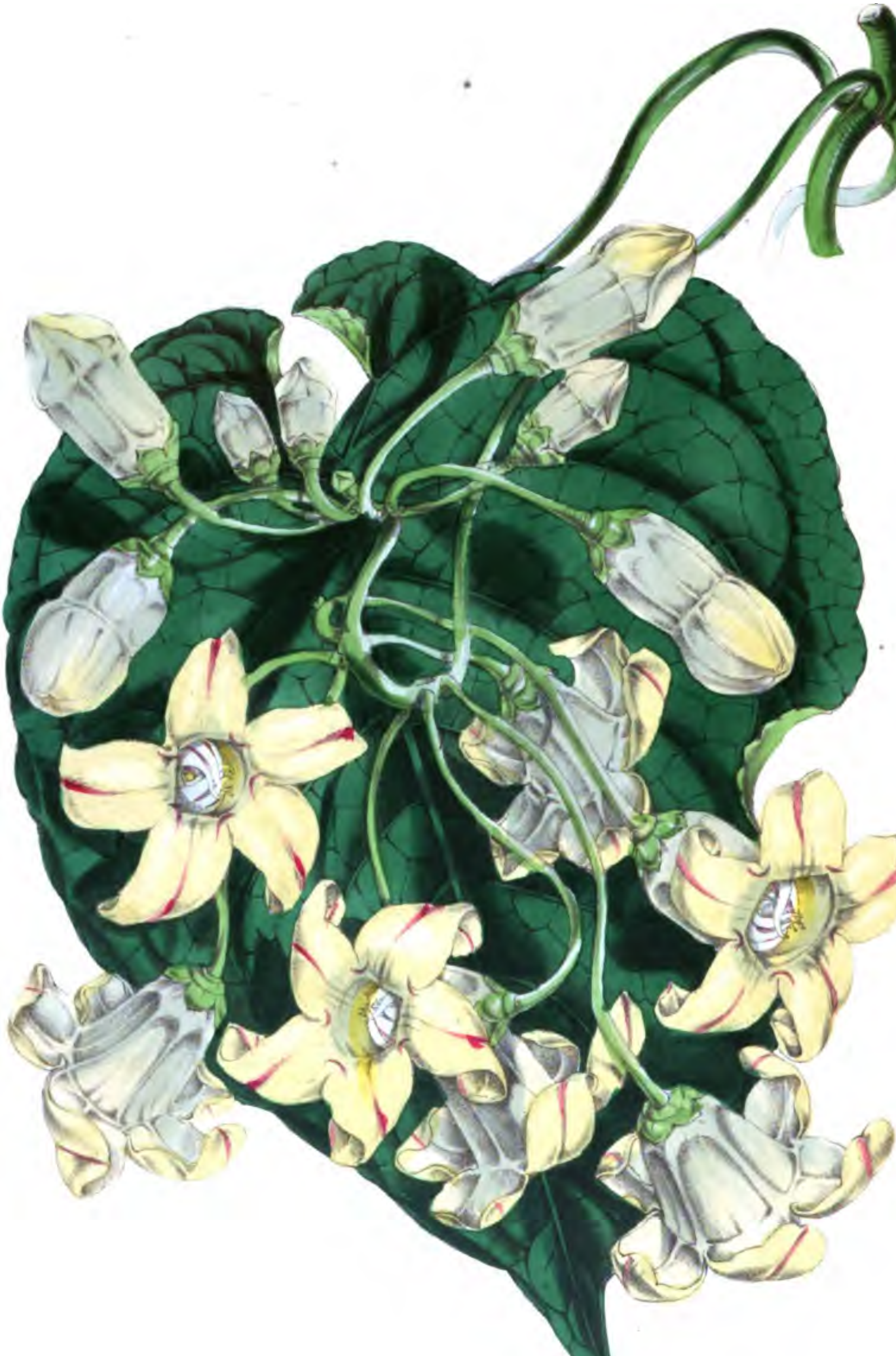
Specific Character.—*Plant* a perennial. *Radical* and *stem-leaves* ternate, divided into cordate, unequally trilobed, doubly serrated segments. *Involucrum* inferior, having a cuneate conformation at the base of the petiole; sessile when superior. *Peduncles* elongated, unifloral, or (if dichotomous) having a flower and involucrum upon each subdivision. *Sepals* twenty, conspicuously silky.

Synonymes.—*Atrogene Japonica, Clematis? polypetala.*

This is the first *Anemone* we have figured, and it affords us no small degree of gratification to adorn our pages with so fine a one. Apart from the fineness and gaiety of its flowers, the greatest recommendation of *Anemone Japonica* is its usefulness. If it is grown in the open ground, and it is unquestionably more in its proper element there than under shelter, it comes to perfection in a fine season when most summer-flowering plants have become straggling, exhausted, and uninteresting. In an unfavourable summer or autumn, too, from blooming naturally at the latter season, *A. Japonica* has a chance of remaining comparatively unaffected when other subjects of Flora's kingdom may be prostrate. Early autumn frosts, it is scarcely necessary to mention, injure the flowers of our plant as they do all others, and this circumstance suggests that it may be made to flower in pots for the decoration of the conservatory or greenhouse. By bringing plants forward under glass, they may be had in flower early in autumn, and by using a retarding process against others, they can be made to bloom proportionably late. The annexed woodcut in connection with the plate conveys some idea of the habit of the plant. Its flower-stems rise from a foot to eighteen inches high, and bear a profusion of blossom. It will stand high cultivation as a pot-plant, and is very suitable for the flower-garden either in masses or as solitary specimens. When intended to occupy a bed in a parterre, it may be planted with something that would flower through the summer and give way to the superior claims of its neighbour in autumn. The present winter has been sufficiently severe to test its capability of withstanding cold. It has been regarded as a hardy plant, grown in ordinary garden-earth, and is freely increased by suckers or offsets.

The history of this *Anemone*, which has long been known to botanists, may be found at page 20 of last volume, but our plant is another of the best results of the Chinese floricultural mission of the Horticultural Society. Their collector forwarded the species from Shunghae to the Society's garden, where it arrived in 1844. Plants in Mr. Glendinning's establishment, Turnham Green, Chiswick, furnished the subject of our drawing in October last.

A Greek word signifying wind, owing to many of the genus growing naturally in elevated and exposed situations, has been selected for the foundation of the generic name.



Holden del. & Lith

Raphistemma pulchellum.

RAPHISTÉMMA PULCHÉLLUM.

(Pretty Raphistemma.)

Class.
PENTANDRIA.

Order.
DIGYNIA.

Natural Order.
ASCLEPIADÀCEÆ.

Generic Character.—*Corolla* campanulate; limb, five-parted; staminal corona five-leaved; leaflets compressed, elongated. *Anthers* terminated by a membrane; pollen-masses fixed beneath their apexes, pendulous. *Stigma* bluntly conical. *Follicles* solitary by abortion, somewhat ventricose. *Seeds* comose.

Specific Character.—*Plant* a glabrous twining shrub, evergreen. *Leaves* largish, cordate. *Flowers* white, corymbose. *Corona* exserted, equal to the limb of the corolla.—*Don's Gard. and Bot.*

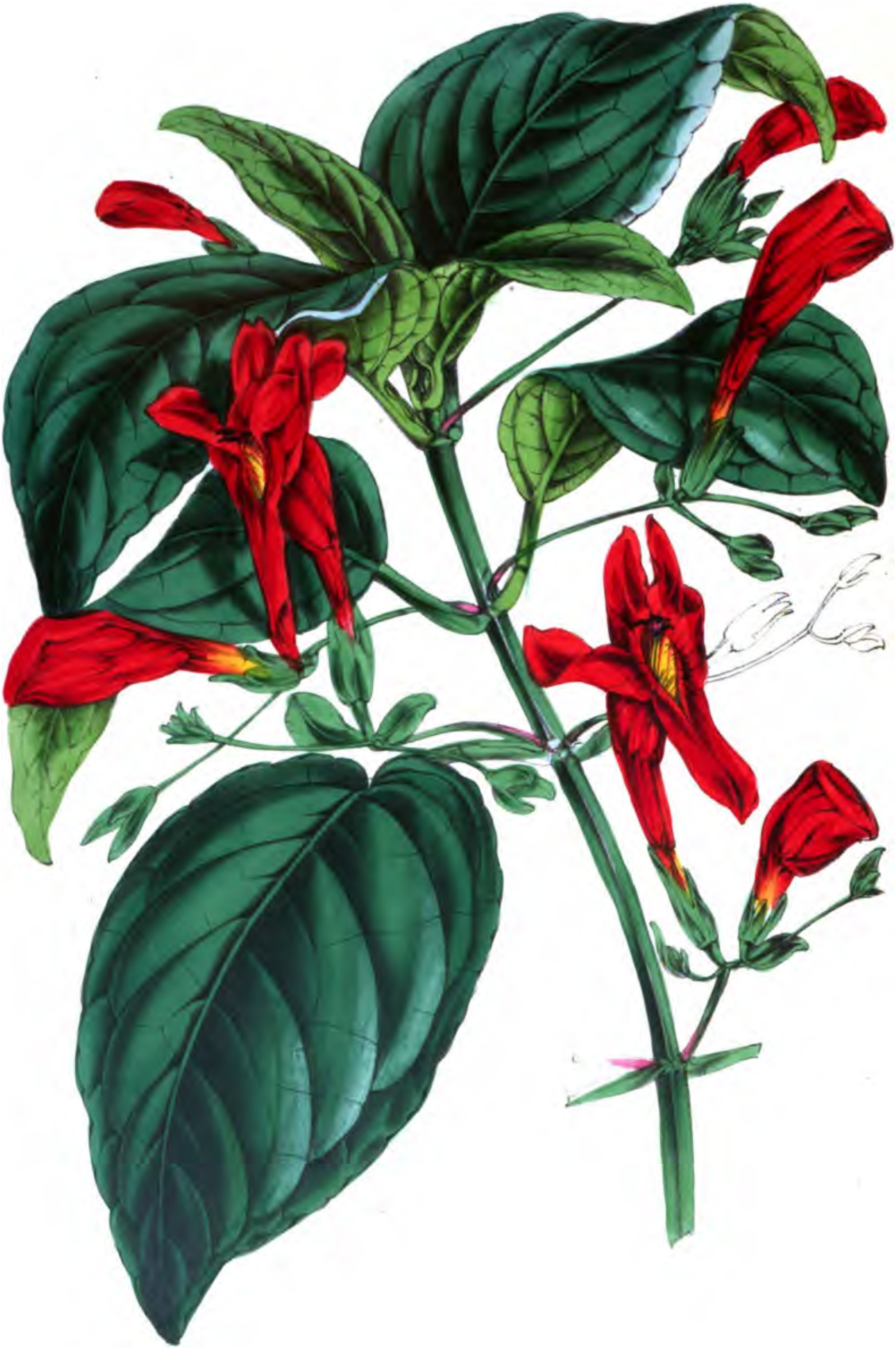
Synonymes.—*Asclepias pulchella, Pergularia campanulata.*

In publishing a figure of this twining plant we adopt the name which Dr. Wallich has given it in his fine work, the "Plantæ Asiaticæ Rariores." But as eminent botanists of the present day do not follow that distinguished author in the present case, *R. puchellum* may hereafter receive another name.

Although we regard this as a comparatively recent addition, we have no direct information as to when it was introduced. We only know of its having flowered with Messrs. Knight and Perry. With these gentlemen, a tolerably large specimen developed a profusion of blossoms last October, and a drawing was taken at that period. Silhet, Gowalpara, Tavoy, and other places in the British territory of Hindoostan, are given as natural habitats of the species.

R. pulchellum is nearly equal to *Stephanotis floribundus* for culture in pots, and superior to it as a conservatory or stove climber, inasmuch as it is not so stiff in its habit, and therefore more suitable for training to columns or rafters in the interior of a glass structure. We compare it with *S. floribundus*, because that beautiful plant is so well known, and also because it has some features in common with this species. It produces bloom well nigh as freely now as *S. floribundus;* and when it has been longer under cultivation, it may be expected to make advances in this particular; it will also succeed in a like temperature, in similar soil, and will flourish and increase under similar management. Though *R. pulchellum* emits a perfume which is agreeable to some persons, and its flowers are white when they first expand, it has nothing of the delicious fragrance nor purity of colour of *S. floribundus.* It is much stronger growing than the plant with which it has been compared, and has rather large cordate tender leaves. The flowers soon change from white to the colour given in their representations. Dr. Wallich, whose figure represents the flowers to be white, writes of the plant as follows:—"This fine shrub is the largest-flowered Asclepiadeæ with which I am acquainted, and I have found it peculiarly adapted to afford a clear and complete insight into the organisation and economy of that difficult family so beautifully developed by Mr. Brown. If the analysis instituted by that illustrious botanist be repeated in a flower of our plant, even long before the corolla has become visible beyond the calyx, the pollen masses will be found quite consolidated into a distinct form, within the respective cells of their anthers. Soon afterwards the processes of the retinacles extend to the masses through the upper part of the anthers, which have now burst open. The stamens are epipetalous, and quite distinct and free; their inner concave side is divided into two lateral cells, containing a sweet mucous fluid, by means of a vertical broadish ridge which rests on the pistils."

The generic name comes from *raphis*, a needle, and *stemma*, a crown, in allusion to the shape of the leaflets of the corona.



S. Holden del. & Lith

Ruellia macrophylla

RUÉLLIA MACROPHỲLLA.

(Large-leaved Ruellia.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
ACANTHÀCEÆ.

Generic Character.—*Calyx* five-parted; lobes equal or sub-equal. *Corolla* hypogynous, funnel-shaped; limb five-parted; lobes equal, spreading, obtuse. *Stamens* four, inserted in the tube of the corolla, didynamous. *Anthers* oblong, two-celled; cells parallel, equal. *Ovary* two-celled. *Style* simple. *Stigma* oval-shaped, channelled at the back. *Capsule* oblong quadrangular, two-celled, six to eight seeded; cells two-valved; valves seed-bearing. *Seeds* adhering by a thread.

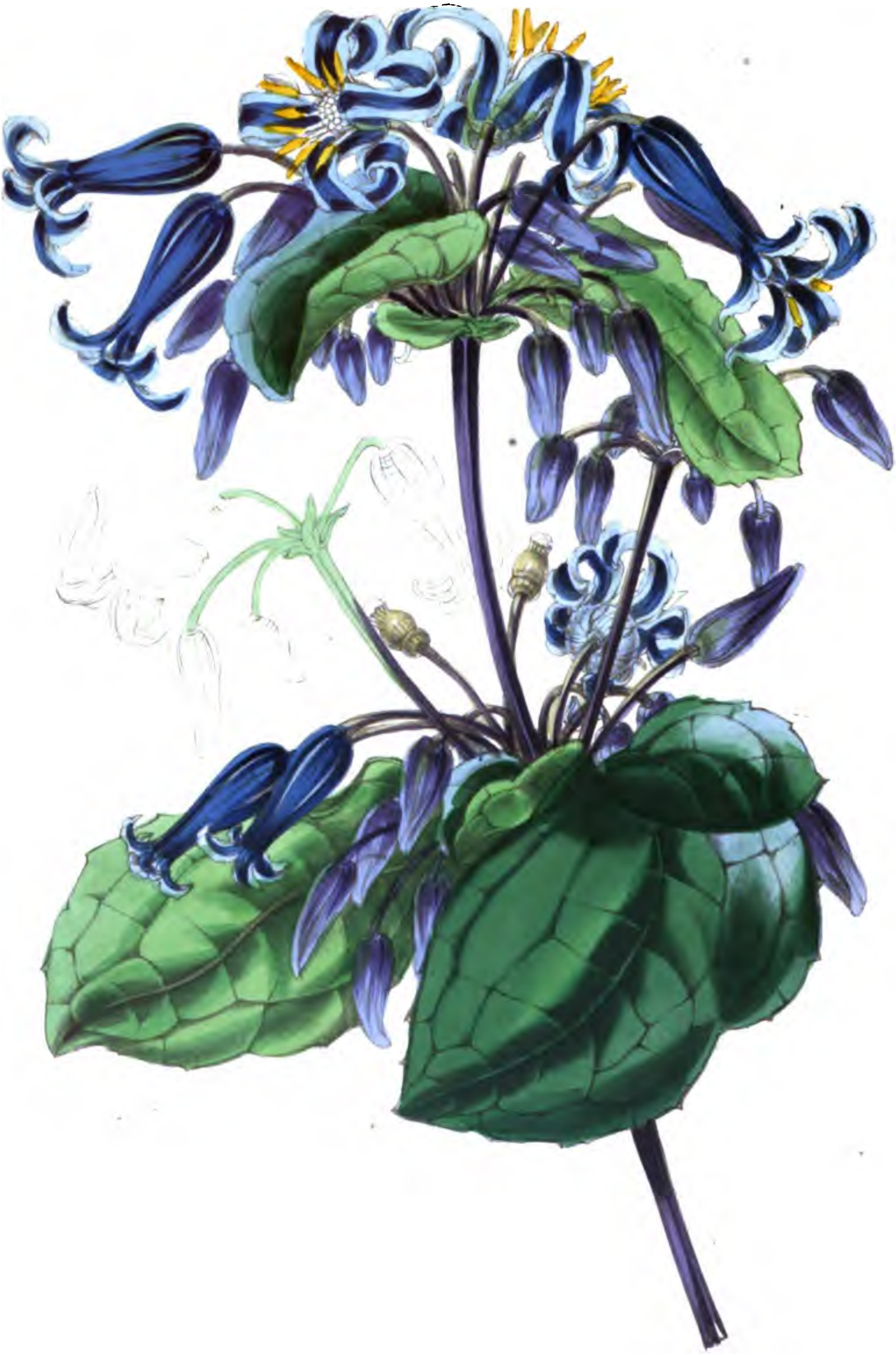
Specific Character.—*Plant* a perennial shrub. *Leaves* ovate-lanceolate, entire, pubescent. *Flowers* produced in dichotomous panicles. *Bracts* linear, situated somewhat regularly upon the small branches; the smaller bracts scaly. *Corolla* bilabiate, divided into obtusely ovate lobes; the paramount lobes approximating closely, the others equidistan . *Stamens* exserted.—*Lindley.*

The fine old stove plant of which a specimen is here represented calls for very few remarks at our hands. Some records speak of it as having been introduced more than twenty years since, and it may have been a cultivated plant in England as far back as that date; but we look upon the present race of plants as modern arrivals, from St. Martha, New Granada, South America, to the Royal Botanical, Kew, or Sion House Gardens; from thence it has found its way into many collections. Messrs. Knight and Perry's produced flowering specimens, which enabled us, last summer, to prepare the present drawing.

Ruellia macrophylla succeeds under culture when grown in the soil and favoured with the treatment stove plants usually receive. It is a free-growing and abundant-flowering species, quickly attaining goodly dimensions; has ample foliage, flowers a considerable length of time in summer, propagates easily by cuttings, and, we doubt not, can be made to do so by seeds likewise. Liberally grown, large specimens display the character of our subject to the greatest advantage; but small ones also flower, and when doing so are worthy of even choice collections.

Dr. Lindley, publishing *R. macrophylla* last year, wrote of members of this and allied genera thus:—"It should be an instruction to all persons sending home South American seeds, not to forget the fine species of Acanthads with which that part of the world abounds; for although many are but weeds, yet others are quite as striking for their beauty as this and the *Justicias*, *Aphelandras*, &c., already in cultivation. They were formerly here in many instances, but requiring a moist warm atmosphere, at a time when gardeners did not know how to obtain heat without dryness, they soon became sickly and died. Among the reputed species of this very genus we see in our Herbarium the *Ruellia trivialis*, *grandiflora* and *longiflora* of Salzmann, all from the woods of Bahia, every one of which is a finer species than even this. Nor are the East Indian species inferior, as is attested by the numerous kinds of *Goldfussia*, *Strobilanthes*, *Dipteracanthus*, &c., with which botanists are familiar—only, however, in their dried gardens. As they are easily propagated and grown, all these would be real acquisitions, and might be easily had."

John Ruelle, a botanist of Soissons, in France, is honoured in the generic name.



S. Holden del. & Lith.

Clematis tubulosa?

✓ CLEMÀTIS TUBULÒSA.

(Tubular-flowered Virgin's-Bower.)

Class.
POLYANDRIA.

Order.
POLYGYNIA.

Natural Order.
RANUNCÙLACEÆ.

Generic Character.—*Involucre* none, or situated under the flower, in the form of a calyx. *Calyx* of from four to eight coloured sepals. *Petals*, none. *Carpels* numerous, aggregate, terminated by a long, mostly feathery tail.—*Don's Gard. and Bot.*

Specific Character.—*Plant* a hardy perennial, of an erect habit, somewhat pubescent. *Leaves* trifoliate, with long petioles; leaflets rhomboidly-ovate, somewhat lobed, mucronate, dentate, with lateral unequally-branched veins, and furnished with long, short, or intermediate petioles. *Flowers* produced in somewhat composite, terminal, and axillary corymbs. *Calyx* blue, tubular at first, but ultimately becoming revolute. *Sepals* linear-oblong, conspicuously pubescent. *Stamens* about sixteen in number, with dilated filaments. *Ovary* and *style* silky. *Stigma* recurved.—*Hooker.*

Clematis tubulosa is as great a novelty as it is a singular one. A plant entitled to the best attention on its own account, independent of its claims on behalf of the numerous family of which it is a member. The past year first found it in an inflorescent state among our collections, but it has not been known long in any condition. It has probably been introduced within the last two years, and we think has come by way of the Continent. That it is hardy its natural regions sufficiently indicate. The "Botanical Magazine" says it is a native of China; we are also informed that plants have been received from the Crimea, in Russia. In gardens its proper position is on rock-work, or in the herbaceous ground; about the former, in particular, it should find a place wherever characteristic accommodation is desired for the species. As has already been hinted, there is more about *C. tubulosa* that is remarkable than that which is beautiful, and a casual scrutiny at once pronounces it unlike the majority of its kindred. The woodcut at the end of our paper gives a sufficient idea of the general habit of this *Clematis*, and only leaves it to be observed that it is peculiarly dwarf, with ample radical foliage, and sends up a flower-stem eighteen inches to two feet. The specimen from which our drawing was taken flowered in the nursery of Messrs. Whitley and Osborn, Fulham, in September, 1846. Its increase is effected by division.

It is difficult to conceive anything more delightful than the *Clematis* family generally—the fragrance of many—the climbing character of the majority, added to the fineness of their flowers. And we have frequently had to lament that the grace and loveliness of many common species of *Clematis* is destroyed by too rigid a system of training; all climbing plants should grow as free and natural as they will, consistent with the object that may regulate the disposal of their ramifications, and this maxim cannot be too often insisted upon.

Clematis is from *klema*, a vine branch, alluding to the circumstance of most of the species climbing in a similar manner to the vine.

ON ACCLIMATISING GREENHOUSE PLANTS.

The theory of acclimatising plants was but little thought of prior to 1823, when a paper upon the subject appeared in the "Memoirs of the Caledonian Horticultural Society," by Mr. Street, of Biel. Since that time many experiments have been made upon a great variety of plants, and opinions have been freely offered both for and against the doctrine; but nothing yet very satisfactory has come under our observation to lead us to think otherwise than that many plants, natives of warmer climates, are nevertheless constitutionally hardy enough to resist the ordinary winters of our climate, and others, when subjected to the experiment, accommodate themselves to it in a greater or lesser degree. Many plants, natives of China and Japan, are sufficiently hardy to defy the severest frosts we have of late years experienced; while others from the same extensive empire require even the heat of the stove to grow them in perfection. Collectors and importers have for the most part contented themselves with stating simply that such and such plants were found in China or Japan, without stating the latitude, longitude and altitude, and the local circumstances under which the plant flourished.

In countries extending over so great a surface as those alluded to, there is a great variety of climate, and hence we find the *Aucuba japonica*, *Corchorus japonica*, *Pæonia Moutan*, *papaveracea*, *Pyrus japonica*, *Thea viridis*, *Thea Bohea*, *Mespelis japonica*, and many others, which in the earlier days of our own experience we knew only as greenhouse plants, now cultivated as some of the most common shrubbery plants, while *Clerodendron squamatum* and *fragrans*, with many others from the same country, still require the care and temperature of our stoves. The same, but to a much greater extent, may be said of the plants of Chili and Mexico, and other countries of great extent and great difference of altitude.

It is, we therefore see, too often left to the cultivator at home, to determine the habits of newly-imported plants, and in general, to err on what may be called the safe side, they are placed in a temperature corresponding to nearly the maximum of the country from whence they came, whilst they actually existed, naturally, near to the limits of perpetual snow. Under such treatment the plants often languish out a few months, or perhaps a year or two, and finally die.

On this interesting subject we would recommend a perusal of "An Essay on the Geographical Distribution of Plants," by N. I. Winch, Esq., from which we have taken the following paragraph, which will, we think, proves that the hardiness of a plant does not depend on the temperature of its native country.

"There appears something enigmatical in the causes which affect the growth of many exotic shrubs well known in gardens and plantations; for many natives of the North of Asia, Portugal, Japan, and even of South America, resist the severity of our winters much better than many which are indigenous in Italy, the South of

France, and Germany. The strongest instances are those of the common myrtle, Pomegranate, and Oleander, all of which, though European plants, perish at a temperature no way injurious to the *Rhododendron ponticum* of Asia Minor. This, as well as the *Rhododendron maximum* of North America, is much more hardy than the Bay, or even than the Portugal Laurel; though it is probable the Pontic rose Bay may be a native of the lower ridge of Caucasus, and the American species generally grows in subalpine situations. From Pursh we learn that *Rhododendron maximum var.* 1, *roseum*, which is the variety common in our gardens, is found near rivulets and lakes in the mountains from Canada to Carolina; *var.* 2, *album*, in the shady cedar swamps of New Jersey and Delaware; *var.* 3, *purpureum*, near lakes on the highest mountains of Virginia and Carolina. The author of the 'Flora of North America' is inclined to think these three distinct species. The *Rhododendron punctatum* is also from the mountains of Carolina, at the head of the Savannah river, and *Rhododendron catawbiense* is a native of the high mountains of Virginia and Carolina, at the head of the Catawba river. The Lapland, the Kamtschatkan, the two Swiss, and two Siberian rose Bays are also alpine plants, and the same may be said of the rare species found on the mountains of Ceylon. This may, in some measure, account for these elegant shrubs withstanding our severe and changeable winters, though they will not thrive in the fenny parts of Lincoln or Cambridgeshire, or in Holland.

"On the coasts of Greece, Albania, and Dalmatia, I have observed," says Mr. Winch, "the limestone rocks covered with the Mastic (*Pistaccia lentiscus*), Myrtle, Rosemary, Laurustinus, common Arbutus, and Juniper. Of these the first and second will not survive our winters; the third, fourth, and fifth will not perfect their fruits, except in favourable situations, and when the season proves uncommonly mild; but the last ascends our mountains to the height of 1500 feet.

"In gardens and well-sheltered grounds the common Laurel of the Levant (*Prunus lusitanica*) *Prunus lauracerasus*, and Portugal Laurel flower freely; and, provided the season be mild, ripen their fruit. The Chinese Rose (*Rosa semperflorens*) and the clustered-flowering Quince of Japan (*Cydonia speciosa*), when protected by a wall, flower throughout open winters; and the latter has perfected its fruit at Wallington, and in similar situations. *Rosa multiflora*, of China; *Buddleia globosa*, of Chili; *Aucuba japonica*, *Camellia japonica*, and *Corchorus japonica*, survive our severest seasons, and thrive very well; but the Bay of Italy (*Laurus nobilis*) flowers only in the southernmost parts of Durham, and the sheltered vales of Cumberland.

On the other hand, the Provence Rose (*Rosa centifolia*) and the Officinal Rose (*Rosa gallica*), said to be from the south of France, but most probably originally from Asia Minor, and the Damask Rose (*Rosa damascena*) from the same country, are to be met with in every garden; nor is the Musk Rose (*Rosa moschata*), of the north of Africa, very scarce."

That plants become acclimatised or naturalised to our climate by any species of extra culture, such as originating young ones from seeds ripened in this country, &c.,

is, we fear, to be but little depended on, at least beyond a very limited extent. Future experience and observation, made without prejudice to any particular theory, may determine what is, at present, not well understood, but which it would certainly be a desideratum to be made acquainted with.

Many greenhouse plants will not only attain a great size and resist the cold of our ordinary winters in one situation, while, in another, not a mile distant, the same species would be killed by the first sharp frost that occurs. Shelter is of much importance, and a poor, dry, or well-drained soil indispensable in attempting to cultivate tender plants in the open air of our climate. The common Laurel, which now flourishes in the most exposed situations, when first introduced to this country, was considered so tender, that the plant was covered over every night, during winter, with a blanket. The Laurel is no more hardy now than it was then; for had it been planted out in a moderately sheltered place, it would have stood the winter without that protection.

"I find," says Mr. Street, in 'Horticultural Transactions,' "that poor, dry, and shallow earths and declivities are particularly well adapted to preserve many plants through the winter season. The quicker the superabundant fluid passes away from their roots the better. When excess of rain, or moisture, and severe frosts, happen nearly together, plants generally suffer much more than by dry frost. If the situation of the plants be dry, frost does not hurt them so soon as if it were wet." Mr. S. conjectures that many plants are capable of enduring a more uncongenial climate or situation than that of their native place of growth; and also that plants obtained from cuttings are better adapted for this purpose than those originated from seeds. In regard to the former of these opinions, we are perhaps not exactly aware of the circumstances under which they exist naturally; and in regard to the latter, plants from cuttings may grow in some cases less luxuriantly than from seeds, and hence, the wood and buds become more fully ripened or matured, and consequently better able to resist the cold of winter.

In planting out exotics, with the view to establish them as open-air plants, he prefers to plunge the pots into which they grow, leaving the hole in the bottom open for the escape of the roots, and also planting over drains, where the roots will be kept dry.

In our own experience, we have found many exotics succeed by being left in the flower-garden borders during winter, having a thin layer of finely sifted coal-ashes laid over the surface of the ground as far round the stem as the roots were supposed to have extended. Covering others with a common flower-pot inverted over them, and occasionally during fine days removed, answered well with others. But the best and most convenient, as well as neatest manner, is covering them with large sea-kale pots, leaving the top or moveable part off generally during the day, and placing it on again during the night and in very frosty weather. Such plants as are planted out for this purpose, should be rendered dry at their roots, by placing under them a stratum of lime-rubbish, broken bricks, or small stones. This not only protects the roots from damp, but prevents them growing too luxuriantly, which they usually do, particularly towards autumn, when the branches and wood being in a very succulent and immature state, they are injured by the frost.

Many cultivators err exceedingly by planting exotics against walls having a southern exposure. This is no doubt a very proper situation for Chrysanthemums, which require a prolongation of season to perfect their flowers, and also for bulbs and herbaceous plants, which die down to the ground annually; but it is the worst possible situation for woody plants, because the warmth of the vernal sun excites them into a growing state too early in the season, and renders them liable to be destroyed, or at least very much injured by the late spring frosts, to which we are so liable in May and often in June. A north-east or west aspect is much better. According to Mr. Street's experience, small plants resist the cold better than larger ones; while Mr. McNab, who has been unusually fortunate in the cultivation of exotics in the open air, recommends old and more fully grown specimens for this purpose.

Upon the whole, so little, comparatively, is at present known of the degree of frost that different plants, even from the same countries, will bear with impunity, that it is advisable to plant out every duplicate that would be otherwise thrown away from most collections, and record the success; for we have often found that species, which we had calculated would stand the winter, have failed, while others that we did not expect have remained uninjured.

The following are recorded in the "Gardeners' Magazine" as having stood the winter at the following places:—

Nerium Oleander, grows luxuriantly without protection, in the neighbourhood of Swansea, Wales.
Myrtles, at Barronhill, Isle of Anglesea, 18 feet high, without protection.
Edwardsia chrysophylla, at the same place, has attained the extraordinary dimensions of two feet in circumference and twenty feet high.
Hydrangea hortensis, prospers well in most situations, and if cut to the ground shoots up again with great vigour. One at Tringwainton, near Penzance, Cornwall, is recorded to be 45 feet in circumference, 8 feet high, and to have had at one time no less than 1300 flowers upon it.

The following exotics stood out for several years prior to 1838, in the Claremont Gardens:—

**Aloysia citriodora survives most winters uninjured, and is only killed to the surface when the thermometer indicates 12° of frost.
*Alstrœmeria, ten species in a border in front of a plant stove, and several of them in the open flower-border.
*Albuca major and minor, in dry warm border in front of plant stove.
*Agapanthus umbellatus, at the bottom of a south wall.
Aster reflexa, — tomentosa, } in the flower-borders, partially sheltered by a cedar tree.
*Amaryllis, many species and varieties, in a dry warm border in front of the plant stove.
*Arctotheca repens has escaped from the open border into the grass walks, from which it appears to be difficult to eradicate it.
**Acacia dealbata, upon a south wall, but extending several feet above it.

**Bignonia capreolata, on walls with both south and west aspects.
— grandiflora, on ditto ditto
Bouvardia triphylla, under shade of a cedar tree.
Calceolaria, many species, and above one hundred varieties, in the open border.
*Canna Indica, in border in front of plant stove.
Coronilla glauca, in flower-garden borders.
**Clianthus punicea, in sheltered borders.
**Calampalis scabra, against a west wall, and in the borders.
*Calla æthiopica, in flower-garden borders.
*Colettia serratifolia, in flower-garden borders.
*Chimonanthus fragrans,
— *grandiflora, } growing as quite hardy shrubs, the two former producing seeds.
— *parviflora, a new species (?)
*Cistus, several species, both in the flower-garden borders and distributed through the pleasure-grounds.
*Cyclamen, several species, in a dry warm border.
Camellia, several varieties, a few feet from a wall.
**Davana dependens, in flower-garden borders.
**Deutzia scabra, in ditto.
**Escallonia glandulosa,
— **rubra,
— **bifida, } cultivated in various stations as quite hardy shrubs.
Edwardsia sp.,
*Eucalyptus perfoliata, on a west wall, seeding abundantly.
*Eucomis, several species, in dry warm border.
*Erythrina crista-galli, in border in front of plant stove.
**Fuchsia, all the genera excepting *arborescens*, and many varieties killed to the ground annually, excepting *F. discolor*, from Port Famine, which has only its small twigs cut with the frost. They, however, shoot up very vigorously in spring, and flower better than if they had not been cut down.
Gnidia simplex, in the flower-garden borders and pleasure-ground shrubbery, in dry soil.
Gayania ringens, } in flower-garden borders.
— uniflora,
*Glycine sinensis.
Geranium flavum, triste, lobatum, millefoliatum, &c., in a border in front of the stove.
Hibberta grossularifolia.
**Hydrangea hortensis, in flower-garden borders.
— **quercifolia, against a wall.
Heimia myrtifolia, } in open borders.
— linarifolia,
*Illicium floridanum, } in shaded shrubbery.
— *parviflorum,
**Lobelia tupa, in border at end of plant stove, seeds freely.
— **purpurea, in ditto.
Linum flavum, } in flower-garden borders.
— **trigynum,
Lagerstrœmia indica, on a south wall. A large plant of this species existed for many years upon a wall in front of one of the greenhouses in the Kensington Nursery.
Lavendula stœchus,
— dentata, } in flower-garden borders.
— viride,
Lythrum virgatum, in the open borders.
**Lonicera flexuosa, } the former quite a hardy creeper, the latter upon a south wall.
— japonica,
Medicago arborea, in flower-garden borders, a fine open shrub, partially sheltered by a cedar tree.

Mesembrianthemum perfoliatum,
— forficalum,
— vaginatum,
— spinulifera,
— curtum.
Many other species of this beautiful and extensive genus has stood several winters in the open borders, but our memoranda of them has been mislaid.
Myrsine africana,
— retusa, in the open borders in the shrubbery.
Mimulus glutinosus, in the flower-garden borders.
Myrtles, several varieties, both against the wall and in the open borders.
Nega gracilis, in the open borders.
Olea fragrans, against a west wall in a pot plunged in the border.
****Oxalis, many species in a dry warm border in front of hothouse.**
Opuntia vulgaris and Ficus indica, in dry lime rubbish.
****Pittosporum Tobira, in the shrubbery in the pleasure-ground for the last ten years or longer.**
Psoralea palæstina, in the flower-garden borders.
Photinia glabra
„ serrulata in the flower-garden borders.
***Phormium tenex, in flower-garden.**
Polygala speciosa, against a south wall.
Pistacia Lentiscus, in pleasure-ground shrubbery.
****Rubus rosifolius, in front of a south wall.**
Salvia Grahæmi,
— Chamædrifolia, in flower-garden borders.
***Tropæolum tricolorum,**
— *pentaphylla,
— *brachyserus, in a warm dry border in front of plant stove.
****Thermopsis nepalensis, in open borders in various situations, attaining the height of 10 feet, and producing seeds annually.**

It will appear sufficiently clear that the foregoing list was drawn up before the intense frost of January, 1838, when the thermometer in the gardens at Claremont indicated 12 degrees below Zero, a degree of cold not experienced in England for many years; yet, notwithstanding, those plants marked (*) in the above list, withstood its rigour, and those marked (**) were only killed to the surface, and came up strongly in the following June. C. M.

MARTYNIA FRAGRANS.

THE season having now arrived for sowing tender annuals, we beg to remind our readers of that beautiful species the Martynia fragrans, which was introduced some years ago to Mr. Marnock, from Mexico. It is very justly remarked by Dr. Lindley to be one of the handsomest annuals that has been brought into this country for many years. It has a solitary stem, which begins to flower when at the height of a foot, and continues branching, and flowering from all its branches, till it forms a specimen three feet high, and the same in diameter; the foliage is large and copious, and the flowers are borne on upright racemes. In form and colour they resemble those of *Gloxinia rubra*, but the red is much darker, and mixed with a bright purple tint; the throat is also marked with yellow; and, in addition to their beauty, the flowers are highly fragrant, perfuming the air for a considerable distance with an odour resembling violets. In every respect this plant is peculiarly fitted for ornamenting the greenhouse and conservatory, growing into a very compact bush, with nothing straggling or littery about it. With such a character, and so many charming qualifications, it is to be regretted that so little is seen of this plant, and so few cultivate it throughout the country. When we inquire for the reasons of this omission, the answers generally are, that the plants being in so few hands, the seeds are scarce and dear, seldom come up when sown, while those which do come up are difficult to keep alive, and require more heat to make them flower than can be given, except in extensive places, where heat and time can readily be afforded. Although these answers contain some facts, they yet lead us to the belief, that the culture of this beautiful plant is not so well understood as we could wish it to be. Under this impression we submit the following hints on the subject. Having obtained the seeds, prepare to sow them as follows:—

Soil.—Take a portion of sandy heath-mould, and mix it well with plenty of sharp white sand; select a pot in which a small bell-glass will stand; fill the pot half-full of broken crocks as drainage, and the remainder with the soil broken very fine, pressing it with the hand as firmly and evenly in the pot as you can, until within half an inch of the top.

Seeds.—Previous to sowing the seeds, soak them in tepid water until the outer skin becomes somewhat softened, which may, perhaps, occupy an hour, after which take them from the water and divest each (carefully, so as not to injure the radicle,) of the outer black coat; when this is done, they must be immediately sown.

Sowing.—Place the seeds upon the prepared soil, and cover them with a quarter of an inch of soil, pressed as before, put on the bell-glass, place the pot in a saucer of water, put it in a cucumber frame, or other place where there is not less than 70 degrees of moist heat, and no more care is required until the plants make their appearance, which will be in about ten days.

Seedlings.—When the plants are fairly above the soil, slightly prop up one side of the glass, to admit a small portion of air; keep the saucer beneath the pot supplied with water, but, however dry the soil might appear on the surface, never, under any consideration, either previously or in this stage of growth, pour water over the soil; the loss of more or less of the plants would certainly be the consequence. As the plants increase in size, give more air, and when they have become pretty strong, take off the bell-glass altogether.

Potting-off.—When the glass has been removed two or three days, proceed to take up each plant carefully, and pot it in a small pot, with the same soil in which the seeds were sown: do not water overhead, as is customary with newly potted plants, but plunge the pots at once into a brisk hot-bed, where there is a very moist atmosphere, and cover them with a hand-glass for two or three days, until they have begun to grow, after which the glass may be taken away. In all after pottings, give them exactly the same treatment as Balsams and Cockscombs.

THE APPROACH OF SPRING.

Spring is advancing! and the sun's rays will shortly scatter the gloom of winter, and again clothe vegetable nature in its bright and cheerful dress. Choice plants in pots, which have stood for months in their winter quarters, now begin to show signs of returning growth. Some of these, although not, generally speaking, difficult to cultivate, yet possess some peculiarities which, if not understood, may puzzle the amateur, by not only preventing the pleasure of seeing them flower to perfection; but even their state of health may be such, with all the attention paid to them, as to disfigure rather than ornament the buildings in which they are placed.

Amongst these may be noticed:—

Brownea grandiceps and *coccinea* (see Mag. Botan., viii., page 130, and ix., page 213).—Few vegetable productions can exceed the splendour and elegance of these truly magnificent plants when in flower. The blossoms are borne in immense bunches near the extremities of the branches, and when expanded the plants appear clothed in complete masses of vivid scarlet and crimson, too brilliant for the eye to rest upon. But in how few collections are they thus found, and how common is it to see them ragged and partially leafless, even under what would appear the very kindest treatment! Both the species are of very slow growth, and their foliage is exceedingly susceptible of injury, and being natives of shady thickets of the West Indies, they will never endure full exposure to the rays of the sun. Heat, shade, moisture, and occasional sprinkling overhead with tepid water, are their requisites during the season of growth—and a dry, cool temperature, with very little moisture to their roots during the season of repose. A treatment very similar to that given in an orchid-house may be taken as a guide. Drought and exposure to the sun in summer, and much heat and moisture in winter, are sure to destroy the foliage and prevent vigorous growth.

Barringtonia speciosa and *racemosa.*—Both splendid plants, with fine, large shining leaves, and showy flowers; but they are very scarce, and are seldom seen in so flourishing a condition as could be wished. In India, they luxuriate on the borders of small rivulets, where, for part of the year, they derive the full benefit of powerful heat and excessive humidity; and during the dry season, when the streamlets are no longer replenished with water, they are exposed to some degree of drought, but never to a low temperature. Strong heat, and a very moist atmosphere are required, to keep them in a healthy growing condition; 70 or 75 degrees is sufficient for the present, but as the season advances, the heat may be increased to even as high as 100 degrees; but the plants must be partially shaded, and the atmosphere be nearly at the point of saturation. Bottom-heat is also beneficial. In their season of repose, it is safer entirely to withhold water from the roots, and also to keep the leaves dry. The winter temperature must never fall below 60 degrees

Fahrenheit, and should never exceed 65 degrees. For further particulars, refer to Mag. Bot., vii., page 261, and x., page 241.

Butea frondosa and *superba* are also plants of great splendour, with scarlet, pea-shaped flowers, not unlike those of Erythrina; no stove collection should be without them. They require to be started into growth this month, by giving an increase of temperature, and a corresponding humid atmosphere. With the exception of shade, which these plants scarcely require, the treatment of *Brownea grandiceps* and *racemosa* will exactly suit them.

Brexia madagascarensis.—Almost all failures in growing this plant to perfection may be traced to giving it too little pot-room.

Bryophyllum calycinum.—A succulent found in almost every old collection, of easy growth, but rarely seen in flower. Plunge the pot containing it up to the rim in a hot-bed, and give little or no water. If there is a good heat kept up in the bed, it will very soon show abundance of flowers. Then remove it to any part of the stove you deem best, and it will continue blooming for a long time.

Calyptranthes.—Although the species of this genus were introduced many years ago to our collections, they are now scarcely to be found throughout the country. The chief difficulty in their cultivation has been a want of knowing the mode of increasing them. Cuttings of the ripe wood should always be put in at the end of September, and stand through the winter in a dry, cool place. During the present month, introduce them into a strong moist heat, plunging the pots up to the rim, and they will strike with the greatest freedom. This is also a proper time to make layers; the parent plant must be introduced into a house or pit, where the pots containing the layers can be plunged in a hot-bed where there is a brisk heat, and the success will be rapid and certain.

Ixora coccinea, crocata, &c.—Although the different species of this lovely genus have been so often noticed before in the volumes of this work, it may not be amiss again to mention, that one of the chief reasons why these plants suffer so often during the winter, is, their being placed too near a flue, or other dry heat, in which situation they require to be often watered, and this exposing them to so many alternations of drought and moisture, finally injures the roots, or perhaps kills the plant. The best situation during the season of repose is a rather cool and shady part of the stove, where they will seldom require watering, and where the soil can be allowed to become partially dry. This is the month to set them growing; the same treatment as recommended for *Brownea grandiceps*, will suit them well. Plunging the pots in a hot-bed is sometimes resorted to, but always with bad success; the roots are too susceptible to admit of this with impunity.

Of greenhouse species we may notice *Angophora cordifolia* and *lanceolata*, two very handsome species, both shy of flowering until they arrive at a large size. If they are now subjected to stove heat for a month or six weeks, they will form flower buds; they may afterwards be removed to their former quarters in the greenhouse.

Astelma eximium is a very beautiful flowering plant, the leaves of which are covered with a soft downiness: if exposed to syringing, too much moisture is retained, and both stem and leaves often perish. In other respects, the culture is simple and easy.

Burtonia conferta.—The species of this genus are all very impatient of moisture at their roots; the remedy is, to put plenty of drainage at the bottom of the pots, and water with care.

Calodendron capensis.—The scarcity of this plant entirely arises from the difficulty with which it is propagated. It is always the best to plant the cuttings in a pot of sand immediately on separating them from the parent plant, and never allowing the leaves to flag.

Canarina campanula and *lævigata.*—These being herbaceous plants, when the tops die down in the autumn, place the pots in a cool situation, where they should receive no water. Now (March) repot and place them in the heat of the stove until they show flower, when they may be removed to the greenhouse, where they will flower profusely.

Cyphia phyteuma.—The tuberous-rooted species must be kept quite dry whilst the tops are dead; about the middle of this month repot them, and as soon as the young shoots are long enough, take them off for cuttings; lay them aside for a few hours to dry up the wounds, afterwards pot them in light soil, but do not cover with a glass, as the condensed moisture usually kills them.

Crowea saligna.—This plant is often ragged and unsightly; this is occasioned by its being crowded amongst other plants. Always set it in a dry, airy, and exposed situation; give good drainage, and water with care.

ON MR. WARD'S METHOD OF GROWING PLANTS IN CLOSELY-GLAZED CASES.

Mr. Ward's interesting discovery of the means of growing plants in closed glazed cases, ought to be hailed with much satisfaction by the floriculturist, as it has opened an entirely new era to the cultivation of exotics, and gives him promise of possessing a large portion of those tropical plants in a living state, that at present he only knows by an obscure description, or at the best by an ill-preserved specimen.

It is almost needless to reiterate the laments of botanical collectors after their return from a long and painful pilgrimage, in search of floral varieties, at witnessing the vast gaps in the collections they have sent home, and to hear the almost constant observations of the parties to whom their plants or seeds were transmitted:—"Yes, sir; I am sorry to say, that from the great length of time the vessel was on her voyage, and the inattention the plant-cabins received while on board, hardly anything reached us alive." But better times have been brought about, both for tho botanist and for the cultivator. The perseverance of Mr. Ward, in following out his system, has enabled him to receive from the most distant parts of the globe, plants that had never before been introduced alive into this country, and consequently leads us to hope, that the more rare vegetable productions of other countries may now be safely transmitted to our own.

The great recommendation of this system is the simplicity of it, and the little trouble that it gives to the seamen; for when once the plant-cabins are placed on a secure part of the deck, *i.e.*, where they will not be exposed to danger by breakage, the seaman has nothing further to do with them, the only requisite being, that they should be placed in a situation where they are exposed to the greatest possible share of light; the poop of the vessel, consequently, being the most eligible situation for them, and also where they are least likely to be—what is a great fault in a sailor's eyes—in the way.

The reader will find, in the "Companion to the Botanical Magazine," for May 1836, a letter from Mr. Ward to Sir William Jackson Hooker, Regius Professor of Botany at Glasgow, in which the original discovery and the results of it are fully detailed. In a letter, which the writer of this received from Mr. Allan Cunningham, the Australian botanist and traveller, dated Sydney, New South Wales, the 19th of February, 1837, he says:—"The two cabins of plants that Messrs. Loddige's kindness supplied me with, were landed yesterday in fine condition, and I am gradually adapting them to the high dry temperature of the colony at this season,* the thermometer (Fahrenheit) being 85° in the shade. The Primroses, Daphnes, Daisies, &c., &c., have all survived."

The eligibility of the plan, and the facility with which it can be put into execution, render it merely necessary for me to give a description of the best form of cabin, and the method of filling it with plants, to insure a healthy arrival at its place of destination. The form of the cabins cannot be better than that usually employed for the conveyance of plants from abroad, viz., in the shape of a *span-house*, which will be the best means of affording the plants the greatest possible light; for, on that circumstance, and I am almost warranted in saying, on that alone, depends the chance of the safe arrival of the plants, always supposing that they have been properly planted in the cabins in the first instance. The size ought not to be too large, because a cabin that two men can lift stands a much better chance than one that requires a tackle to move; therefore, the length had better not exceed three feet six inches, the breadth twenty inches to two feet, and the height about two feet six inches; but that must all depend, principally, on the kind of plants that are inclosed in it. The cabins should be strongly made of inch or inch-and-a-quarter board, and the lights accurately fitted to the sides and ends, so that when the plants are planted they may be securely screwed (not nailed) down. The glazed portions of the cabins will be much more secure if a wire-work is fastened over them. The bottom of the cases should be strewed with gravel or small stones, to allow of draining; otherwise the tender fibres of the roots, the great source of nourishment to plants, will become damaged. At the lower part of the cases there should be a hole with a plug to draw off any superfluous moisture that may accumulate. The plants when first placed in the cases should be well watered, as much to settle the soil round their roots as to refresh them after transplanting; the water that will drain through the mould had better be drawn off at the plug hole; they are then to be carefully closed up, and there is but little doubt that they will reach their final destination in perfect health. In all the instances that have come to my knowledge, where the cabins have been fully exposed to the light, the results have always been most favourable; but where, from over anxiety, the cabins have been placed below, in darkness, they have literally been killed with kindness, for the course pursued has invariably proved fatal to the vitality of the plants.

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* The end of summer in the southern hemisphere. The plants were put in the cases early in October 1836, and left England the last day of the same month.

As a medium for the conveyance of seeds, these cases will also become extremely valuable, for it is well known there are many seeds whose vital principle is rapidly destroyed by exposure to the atmosphere; but in this manner an opportunity is afforded of preserving those seeds which travel badly, and by the time they reach England germination has so far advanced as to allow of their being transplanted with safety. By the above means the Messrs. Loddiges were enabled to procure a large stock of that very beautiful Australian palm *Corypha australis*, and many other equally rare and valuable plants, whose seeds rarely, if ever before, germinated in this country.

ON THE CULTIVATION OF CHINESE CHRYSANTHEMUMS; WITH AN ARRANGED LIST OF SORTS.

◆

THAT the whole of the Chinese Chrysanthemums will live in the open air of this country in moderately sheltered gardens, and that they will produce their flowers when trained against walls, is admitted. But it very often happens that they are cut off by early autumnal frosts just when they are coming into their greatest perfection. To remedy this defect, we would purpose to grow two sets of plants, one set planted against a south wall, as being the best for bringing them early into flower, and the other set grown in pots, to be removed into the greenhouse, conservatory, or even cold pit, upon the first appearance of winter. The plants for the latter purpose should be propagated by cuttings annually, and these having produced their flowers in the greenhouse, should be planted out the following spring, to flower against the wall.

The beginning of April is a very proper time for putting in cuttings of Chrysanthemums which are intended to flower the ensuing autumn, and the cuttings should be taken from the top shoots of the last year's plants. These, when prepared, should be about three inches long, and should be planted into pots of the size called small sixteens, one cutting into each pot. The soil for this purpose should be one half loam, and the other half peat, adding a little sand should either of these be deficient in that material. When planted, the pots should be placed into a pit or frame, upon a mild bottom-heat, in which they will root freely in about three or four weeks. When rooted, the plants are removed into a cool frame to harden them, and fit them for being placed in the open air. About the beginning of June they will require to be shifted into larger pots, of the size called forty-eights; after which, they are to be arranged in the open air, upon a piece of ground prepared for them, in a dry and airy situation. While here, they should be watered frequently with liquid manure; but not plunged, as in that case they would be likely to send their roots down into the soil, and these would be injured whenever it becomes necessary to move them. Soon after the above second potting, the tops are pinched off the plants, to cause them to branch out into good bushy heads; but it is to be strictly observed, that no more branches be allowed to remain than the plants are likely to support. In August they are shifted a third time into thirty-two sized pots, and set sufficiently apart from each other at this time, to allow a free circulation of air passing through amongst the plants, which should be occasionally moved to prevent their roots from entering into the ground upon which they stand. The mould used for this third and last potting should be both strong and rich, that is, strong loam and dung well blended together. It has been recommended to reduce the number of flower-buds with a view to increase the size of the individual flowers, but unless for some particular purpose this practice is unnecessary. No doubt but that by doing so the size of the flowers would be a little enlarged, but it is questionable whether a greater number of flowers, if even of somewhat less a size, would not produce a much better effect. In arranging Chrysanthemums in the greenhouse, some degree of taste should be displayed, by a proper disposal of the different colours, sizes, and habits of the plants.

The flowering season of this family may be considerably lengthened, by judicious management in bringing them into the house; thus, for example, the early-flowering sorts should be taken in first, and that soon after they have formed their flowers; as these decay, the next in order of flowering should be taken in to replace them, and so on, leaving the latest of all to be taken in last. To prevent these from sustaining injury from early autumnal frosts, it will be well to remove them into a cold pit or other sheltered place in time, giving plenty of air during the day, and otherwise retarding rather than forcing them into flower.

By an arrangement of this kind, a display of these varied and beautiful flowers may be kept up from the beginning of October till the end of December,—three months more scanty of flowers than any other during the year. The following list includes some of the finest varieties of this family. But the Chinese possess many varieties which have not reached this country, and are in the habit of rearing them from seed, their climate being particularly favourable for that purpose. A nurseryman in Jersey has also succeeded in obtaining a number of varieties, the flowers of which are certainly, in many cases, improvements on the varieties already in cultivation, and lead us to hope that still further improvement may be made in this department of floriculture.

SECTION I.

Ranunculus flowered.

Blush Ranunculus flowered
Buff, or Copper
Expanded Light Purple
Pale Pink
Park's Small Yellow
Pink or Lilac
Quilled Light Purple
Small Yellow
Spanish Brown
Windsor Small Yellow
Yellow Waratah

SECTION II.

Incurving Ranunculus flowered.

Curled Blush
Curled Lilac
Large Quilled Orange
Quilled Pink
Superb White
Two-coloured incurved

SECTION III.

China Aster flowered.

Clustered Pink
Early Blush
Early Crimson
Paper White
Sulphur Yellow
Two-coloured Red

SECTION IV.

Marigold flowered.

Brown Purple
Changeable Pale Buff
Golden Lotus flowered
Golden Yellow
Late Pale Purple
Pale Home Yellow
Starry Purple
Superb clustered Yellow

SECTION V.

Lossal flowered.

Changeable White
Large Lilac
Late Quilled Yellow
Old Purple or Crimson
Quilled Flame Yellow
Quilled Salmon
Quilled White
Quilled Yellow or Straw
Tasselled Lilac
Tasselled White
Tasselled Yellow.

SECTION VI.

Half-Double Tasselled flowered.

Semi-double Pale Buff
— Quilled Orange
— Quilled Pale Orange
— Quilled Pink
— Quilled White
— Quilled Yellow

SECTION VII.

Wheeler's British varieties.

Changeable Yellow
Clustered Blush
Dwarf Pale Rose
Expanded Crimson
Expanded Rose
Flat Pink
Grooved Light Purple
Incurving Pink
Rosy Purple
Sanguinea, or Blood Red
Starry Blush
Wheelerianum

FLORICULTURAL NOTICES.

NEW OR INTERESTING RECENTLY FLOWERED PLANTS, IN THE PRINCIPAL METROPOLITAN NURSERIES AND GARDENS.

Aca'cia squama'ta. From the Upper Clapton Nursery (Messrs. Low's) this plant was sent last month to a meeting of the Horticultural Society in Regent Street. It is an open, very slender-branching species, with very slender alternate leaves, at whose axils the flowers are borne. These are yellow, and produced very freely; but there are seldom more than two at each leaf expanded at one time.

Ansе'llia Africa'na. A noble specimen of this plant is now blooming in the nursery of Messrs. Loddiges. It consists of upwards of a dozen pseudo-bulbs, some of which are just issuing their panicles of blossom, and others already bear expanded flowers, whose rich yellow labellum and dark brown spotted sepals and petals give the plant quite a gay—while from the drooping of the panicles is derived—a graceful aspect. The vigour and freedom with which *A. Africana* flowers add greatly to its attractions.

Aza'leas. In one of the greenhouses of the Horticultural Society's gardens, *A. squamata* and *obtusa* are flowering finely. In habit both these species are dwarf and compact. The latter has small dark rich scarlet flowers, but produces them most profusely. The former also flowers freely. Its flowers are described in another page. Both are interesting additions to the many kinds already in cultivation.

Co'rrea. A beautiful *Correa*, a hybrid variety, is flowering at Messrs. Henderson's, Pine-apple Place. With them it at present is only distinguished from others by the No. 23. Its foliage is very neat and small, clear green, and therefore minus the rusty appearance so common to members of this genus. The chief peculiarity of this variety is the long peduncles of its flowers; they are about an inch long, and so slender, that the least movement of the plant, or of the atmosphere in its vicinity, occasions a trembling in the whole of the flowers. The latter are a reddish orange colour.

Cymbi'dium Mastersia'num? The Messrs. Loddiges are flowering a *Cymbidium*, which they suspect to be this species. The specimen blooming is a fine one, has leaves about two feet long and not more than an inch wide, it is sending out several racemes of flowers that are borne in pairs, and are as large as the blossoms of *Cattleya Harrisoniæ*, pure white, with a dash of yellow down the centre of the labellum. It is a very superior species.

Da'phne Fortu'ni. This interesting plant is bearing its delicate lilac flowers most prodigally in the garden of the Horticultural Society. It blossoms in a leafless state, but notwithstanding is an acquisition to the greenhouse at this season.

Dendro'bium specio'sum. In the last-mentioned establishment this extraordinary Dendrobe is flowering very finely. The specimen is a fine one, approaching five feet in diameter, and has nineteen spikes of bloom, proceeding from as many pseudo-bulbs, that average two feet in length. One of the largest spikes bore more than a hundred blossoms. The latter are yellow and sweet-scented, and when produced as they are by the specimen in question, are very ornamental.

Læ'lia supe'rbiens. On the introduction of this plant to our country it was remarked to be the most gorgeous of its genus, or indeed of any of the Orchid family. The celebrated specimen in the possession of the Horticultural Society has this season flowered in a manner which testifies that character is a just one. It has had nine flower-scapes, averaging six feet or thereabouts in height, each bearing a large cluster of flowers on its summit. One of them had as many as thirteen blossoms.

Leschena'ultia obla'ta. This plant is well deserving of attention, not only as blooming this time of year, but also for the profusion, large size, and brilliant colour of its flowers. It is more robust in habit than *L. formosa*, and has flowers of a bright flame colour. Another variety, whose flowers are paler and smaller than those of the above, but an equally profuse bloomer, we noticed with that species in the Nursery of Messrs. Frazer, Lea-bridge Road.

Onci'dium la'cerum. A species differing from *O. Ceboletum* in having pendulous, longer, and more slender pseudo-bulbs. The flower-scape is about two feet high, and bears abundance of blossom. We observed flowering plants at Messrs. Loddige's and in the collection of Mr. Beck, Isleworth.

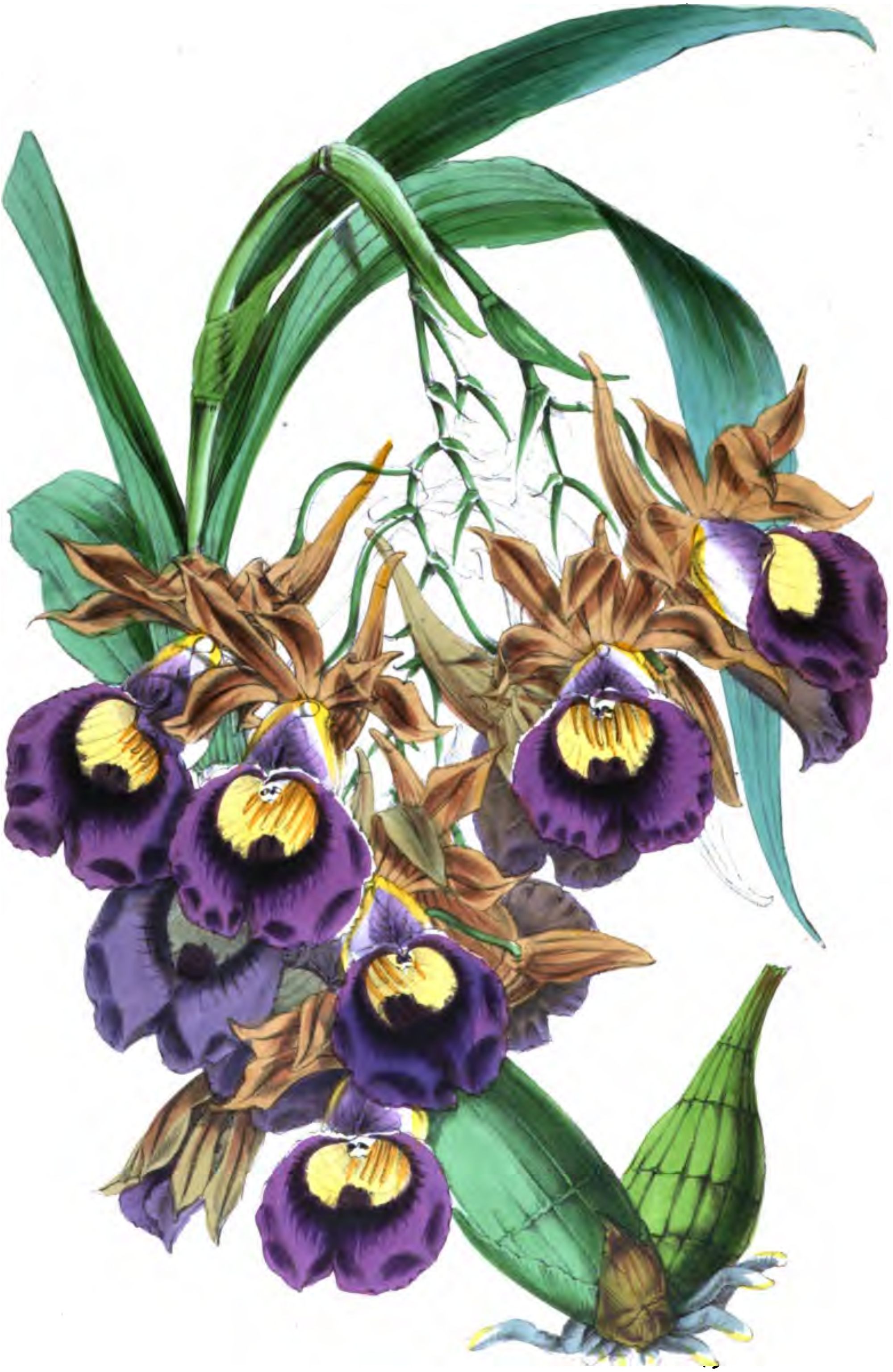
OPERATIONS FOR MARCH.

Those who have the cultivation and charge of Exhibition specimens would do well to be very careful they are not neglected at this season.

Potting and shifting, in most plant places, is still the business of the day, and should be zealously pursued ; one conspicuous feature being diligence in the operation, and another, an indulgent allowance of root-room for the plants. These processes completed, Orchids and other stove plants must have assiduous attention ; be properly trained, provided with suitable support, have their shoots thinned, and be well protected from the ravages of insects. Specimens growing in the open borders of houses, and large ones in pots, have great need of the latter directions being remembered in reference to them. Continue to give a thorough occasional soaking of water, and, at times, liquid manure to old plants, and favour such young ones also, of all kinds, as will bear it with the regenerator recommended. Propagation by seeds and cuttings must have full attention this month. There are many things that will strike root freely now, which will not do so with equal readiness hereafter. Some of the more choice annuals usually raised to flower in pots must be sown soon, as well for that purpose as for filling up borders and beds. A general sowing of tender annuals may be effected as soon as possible, where accommodation will admit of their being potted off in time, and afterwards properly treated. Hardy annuals, too, if they are wished to flower at the usual season, should also be sown, either in their final places or in some sheltered position, to be hereafter planted out. Let justice be done to seeds of valuable plants : not only should it extend to their sowing, but to after tendance. Increase of flower-garden plants by cuttings, and hardening those established off, should be pursued, where the former is necessary, and the latter hitherto neglected. *Dahlia* tubers may be put where they will begin to move, the early part of this month. For general cultivation, the period is quite soon enough. Nothing is gained by having plants of this showy and popular flower a large size at planting time.

The period is now close at hand when forced flowers will be superseded by a crowd of plants whose blooming season is approaching. Still favourably regard the remnants of the forcing-house notwithstanding, not only on account of their blossoms, but likewise because the plants will do to aid in cheering another year with their floral beauties. Numerous choice Orchids bloom at this time of year : do not neglect them, but have a keen look-out that no injury happens to the inflorescence in any stage of its development.

In the out-door department, it will be wisdom to endeavour to complete whatever work may be standing over from any cause ; but the work of the season must not be neglected to enable that to be done. The winter we are just leaving behind may have committed some ravages among rather tender things, young hardy shrubs, &c. Let an examination be made, and steps taken according to its result. Whatever planting remains to be done should be attended to with all despatch ; that planting, we mean, which has been occasioned by an extension of premises or alterations, and which may consist in the removal of hardy shrubs, trees, &c. Putting out also whatever will bear the open air should have due attention, as much to make room where space is often valuable at this season, as for the welfare of those things that are thus disposed of permanently. Prune Roses and other flowering things at intervals of a fortnight or so for the next two months, to insure a succession of flowers. Masses of evergreens, hedges, &c., may be pruned to any extent in the course of this month ; and perhaps they are best pruned at this season, as they soon recover by a young growth the favourable appearance pruning may have destroyed. Preparing flower-ground, gravelling walks, edging, and otherwise getting them in good order, laying Box and other edgings, is business that must have its proper amount of attention.



S. Holden, del & lith.

Galeandra Baueri

GALEÁNDRA BAUÈRI.

(Bauer's Casque-Wort.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

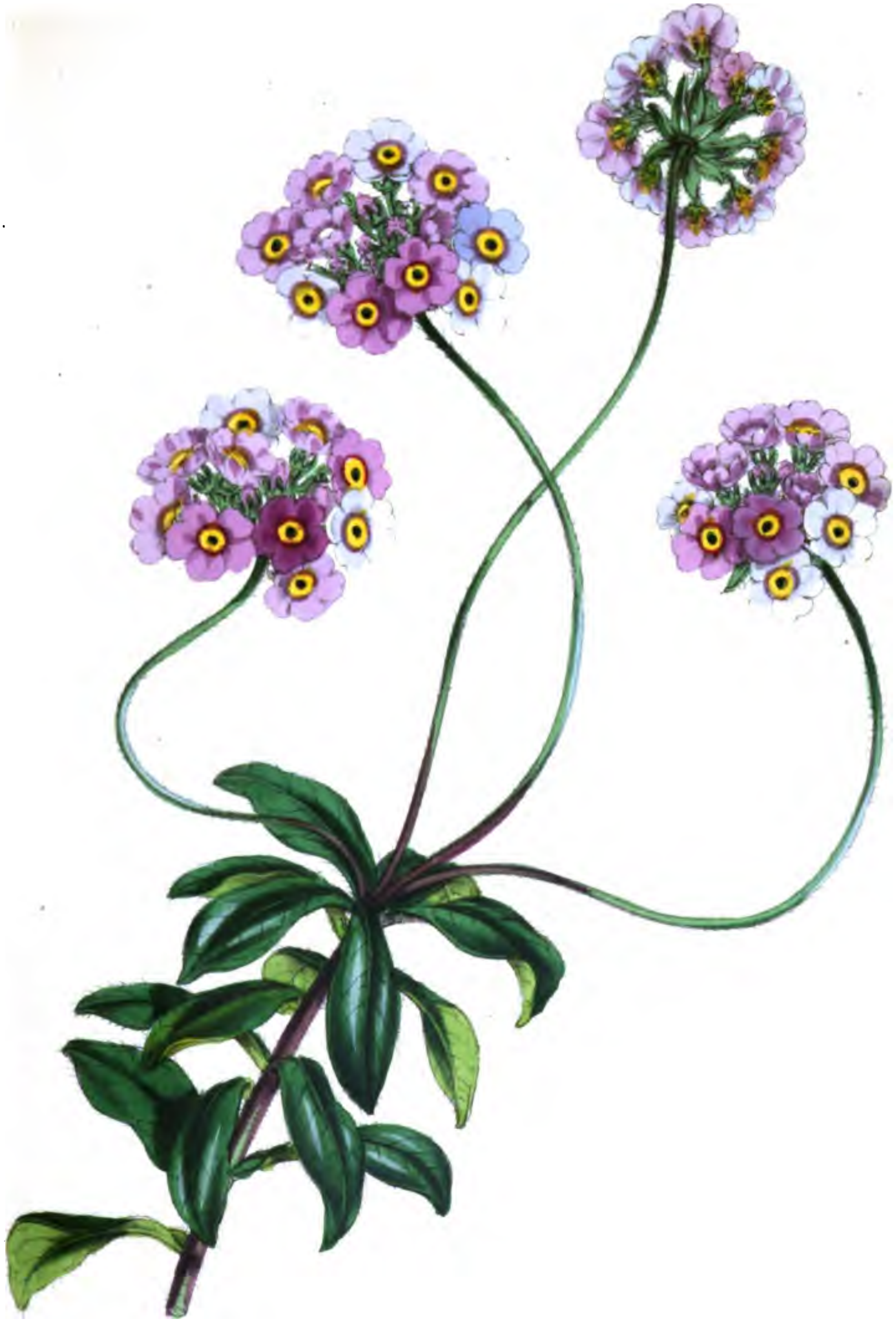
Generic Character.—*Perianth* spreading or connivent. *Sepals* petaloid. *Lip* funnel-shaped, spurred, sessile, and without fringe on its edges. *Column* erect, with membranous wings. *Anthers* casque-like. *Pollen-masses*, two. *Leaves* plaited. *Scape* radical. *Raceme* terminal.

Specific Character.—*Stem* simple. *Leaves* lanceolate, three-nerved. *Sepals* five, linear-oblong, acute, of a green colour, mixed with brown. *Lip* large, notched round the edges, purple.

This pretty Orchid is a native of various districts in Mexico, from whence it was first introduced some years ago. There have been several varieties of this species collected, some of which are very inferior to the specimen figured. Although the flowers are not rich in colour, the plant possesses several excellencies—and not the least is its very prolonged blooming season; the flowers begin to expand towards the close of summer, and continue opening in succession, if the temperature is favourable, until nearly Christmas. They are also produced in great abundance, with merely ordinary care and trouble; and by continuing to flower so late in the season, the house is greatly enlivened at a time when flowers are generally becoming scarce.

In cultivation it requires a high temperature, with abundance of moisture, when in active growth; and of course to be kept rather cool and dry (like other Mexican species), when at rest. It grows freely, potted in rough fibrous pieces of heath mould, with a copious drainage of potsherds and charcoal, or even attached to a block of wood; and certainly deserves to be in every collection. The plant from which our drawing was made flowered in the splendid collection of Messrs. Loddiges last autumn.

The generic name is derived from *galea*, a casque, and *aner*, anther.



S Holden. del & Lith

Androsace lanuginosa.

ANDRÓSACE LANUGINÒSA.

(Shaggy-leaved Androsace.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
PRIMULÀCEÆ.

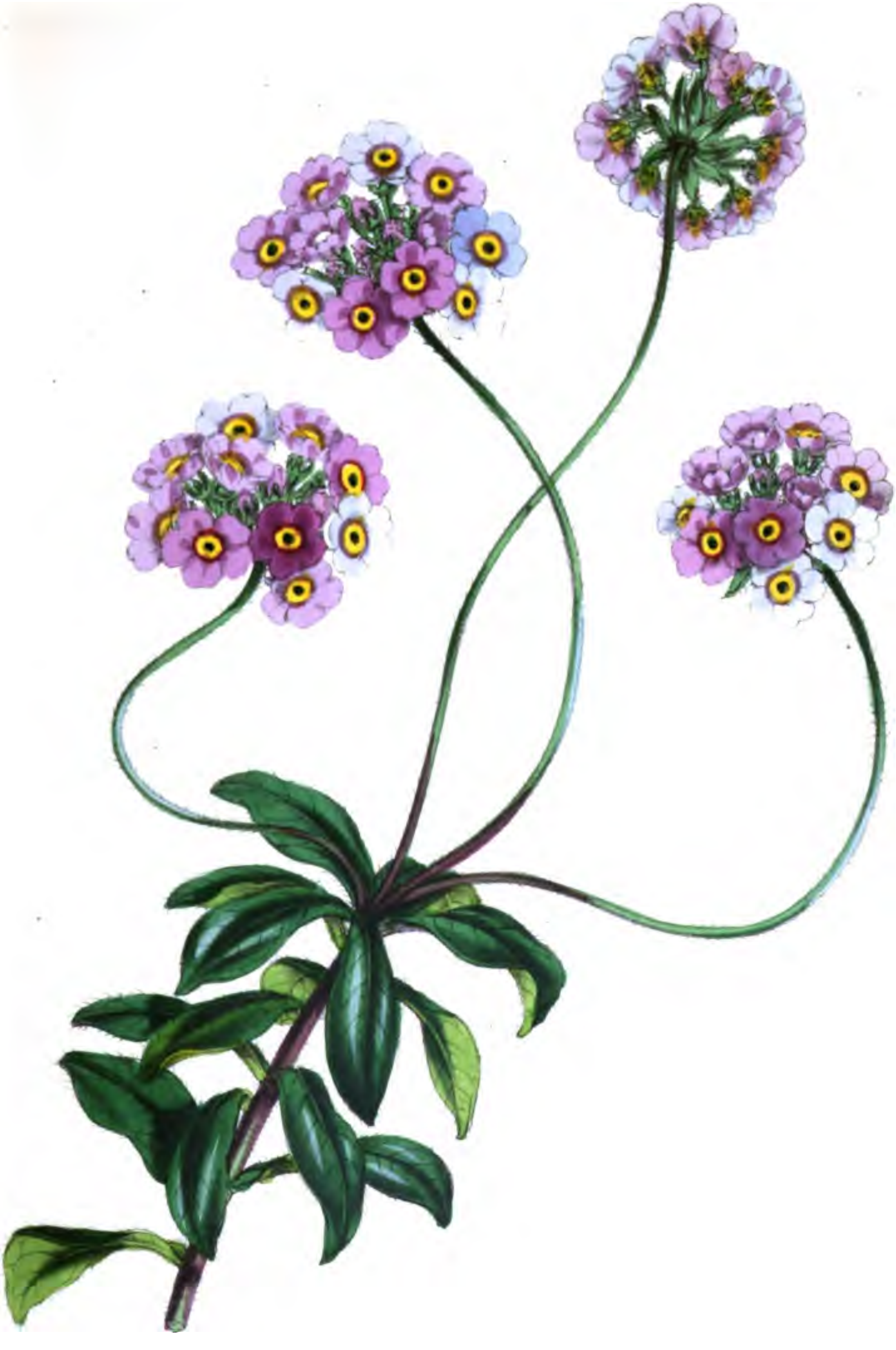
Generic Character.—*Calyx* five-cleft, or five-toothed, inferior. *Corolla* monopetalous, hypogynous, funnel-shaped, or salver-shaped, five-cleft, contracted at the orifice. *Stamens* five, inserted in the tube of the corolla, and opposite the segments; *filaments* short; anthers ovate, two-celled, opening longitudinally. *Ovarium* one-celled; *ovules* five or indefinite, peltate. *Style* filiform. *Stigma* obtuse or rather globose. *Capsule* one-celled, opening with five longitudinal valves. Seeds five or indefinite, peltate; *placenta* central; *embryo* in a fleshy albumen, and lying across the hilum.

Specific Character.—The whole plant covered with long wooly hairs. *Flowers* many, in a terminal umbel. Tube of *calyx* ventricose; *corolla* rosy pink, with a yellow eye.

Artificial rockeries, as they are too frequently met with, are very uninteresting objects in pleasure grounds, and, in many instances, would be well nigh insufferable, did they not furnish appropriate sites for a most interesting class of plants. Clothed with a race of Alpines, the deformities of almost any rockery are hidden by a truly delightful mantle.. The plant here figured is one of this race. It is found plentifully on the Himalaya Mountains, and, we learn from the "Botanical Magazine," that seeds of it were introduced from that station a few years back; from which stock of plants, in all probability, those now in our collections have originated. The species is hardy, and propagates by cuttings or seeds. Autumn is its season of flowering; it blossoms abundantly, and, with a little care, can be rendered more interesting than it is naturally. It should often be renewed from seeds, and repeatedly raised from cuttings; young plants being far more vigorous than old ones.

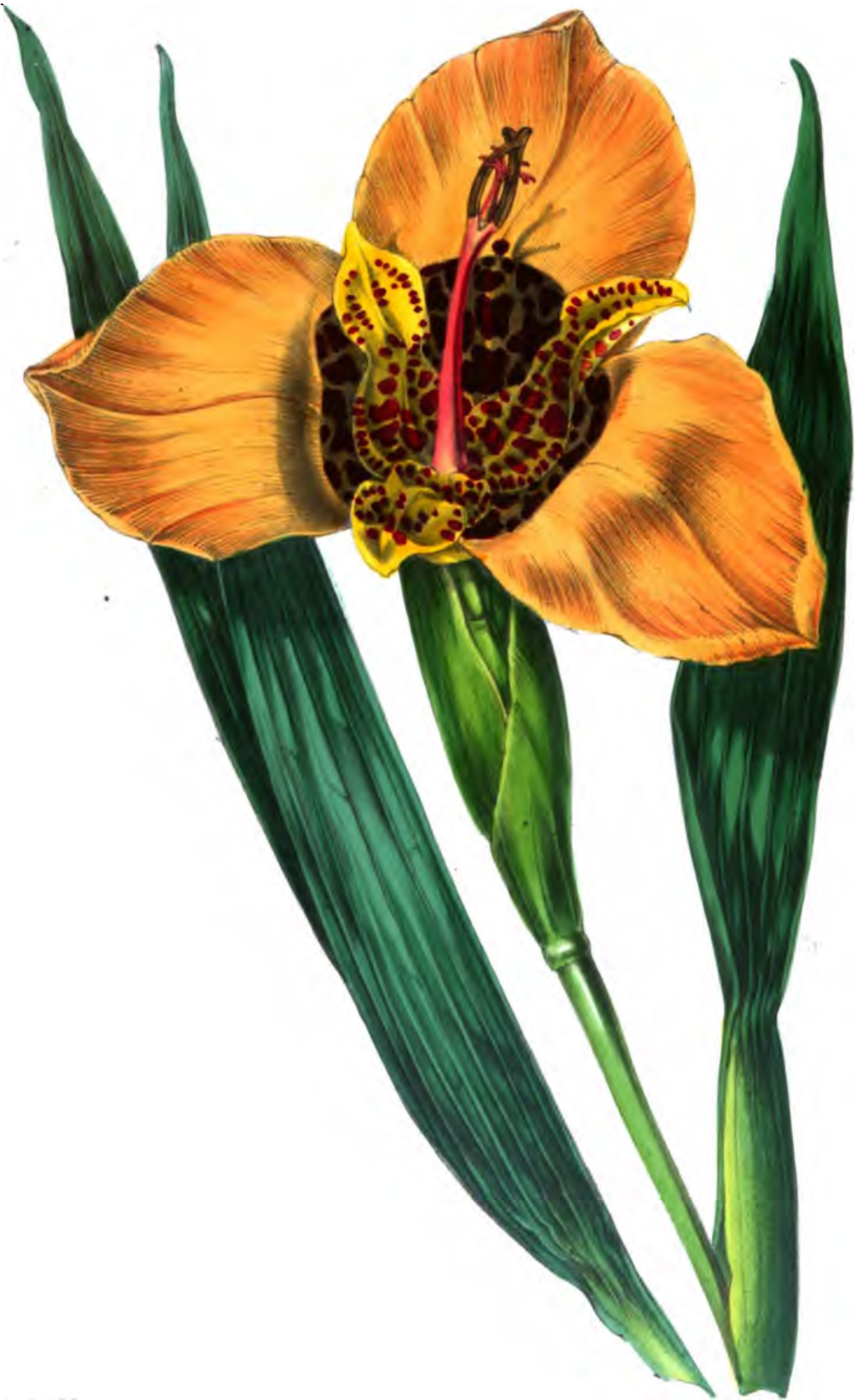
A plant flowering with Mr. Lowe, of Upper Clapton, in August, 1845, furnished the specimen represented in the accompanying plate.

Androsace is derived from the Greek words, *aner*, man, and *sakos*, buckler; the leaves of some of the species bearing some resemblance to an ancient buckler.



S Holden. del & Lith

Androsace lanuginosa.



S. Holden del & lith

Tigridia conchiflora var Watkinsoni

TRIGRÍDIA CONCHIFLÒRA WATKINSÒNI.

(Watkinson's Shell Tiger-flower.)

Class.
MONADELPHIA.

Order.
TRIANDRIA.

Natural Order.
IRIDÀCEÆ.

Generic Character.—*Perianth* six-leaved, petalloid, three *outer* ones large, ovate, hollow at the base and sessile; three *inner* ones smaller, clawed, contracted in the middle. *Stamens* three; *filaments* united into a long tube. *Stigmas* three, bipartite. *Capsule* oblong and angular.

Specific Character.—*Stem* angular. *Leaves* ensiform, nerved. *Perianth*, three *outer* pieces oblong-ovate, acute; three inner above the medium size, ovate, acute.

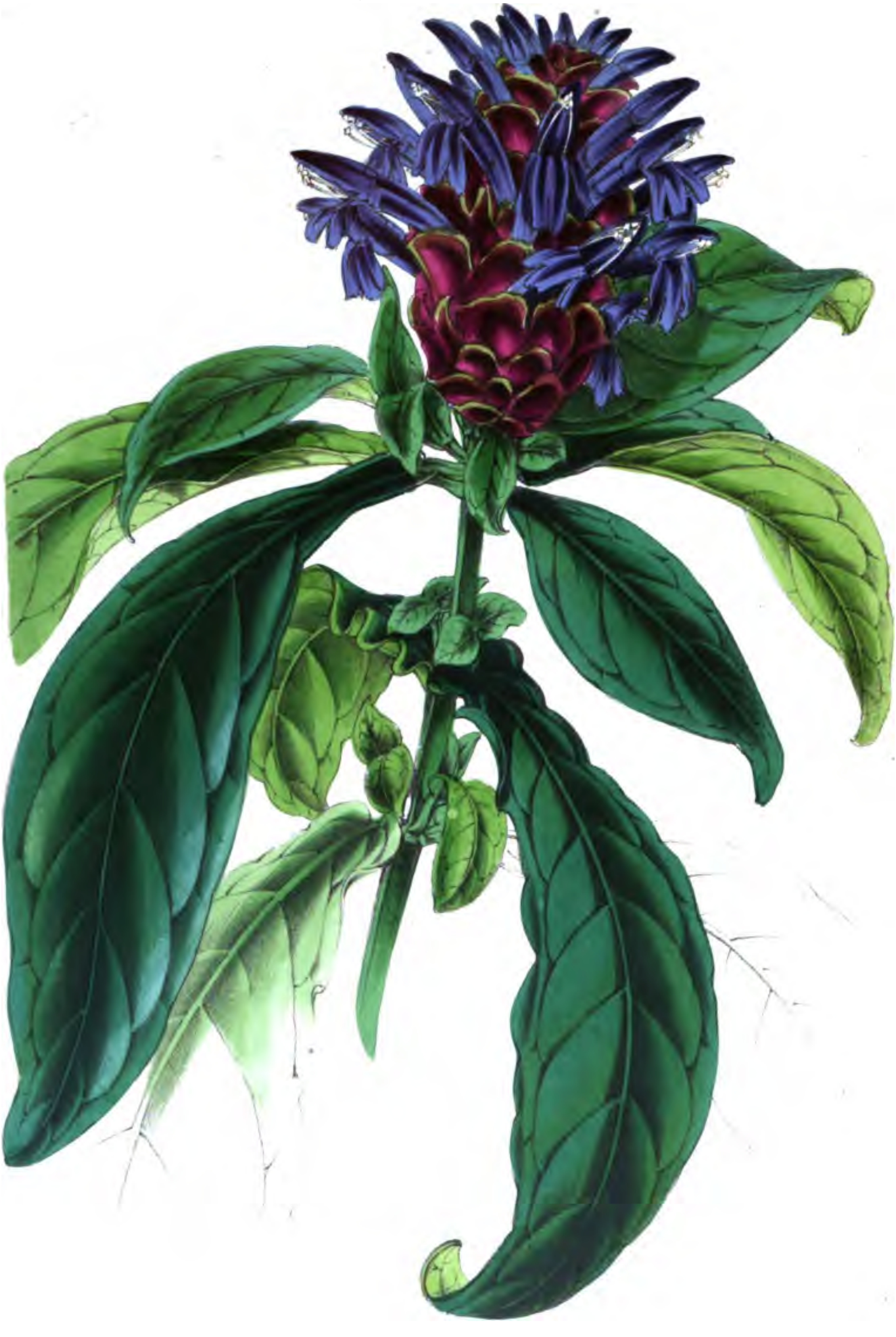
Watkinsoni, a hybrid, habit of plant like T. pavonia. *Flowers*, three outer pieces orange-yellow, three inner pieces, deeply spotted with red and brown, sagittate.

The Tigridias are now usually found in company with plants of an inferior or second-rate description; they are, therefore, commonly grown in situations where their showy flowers are seldom seen to advantage. This is to be regretted; for although very fugitive in their duration, they yet deserve far more attention than is usually bestowed upon them.

T. conchiflora Watkinsoni was raised by Mr. J. Horsefield of Whitfield, near Manchester, from seeds of the *conchiflora* fertilised by the pollen of *pavonia*. The following is Mr. Horsefield's own account of it:—"About ten or twelve years ago I cut out the anthers of a flower of *T. conchiflora*, as soon as it opened in the morning; towards noon of the same day, I took the burst anthers of a flower of *T. pavonia*, and dusted the stigmas of the former flower. The seed-vessel ripened, and a few seeds came to perfection; three of these produced plants whose flowers combine the properties of the two species. In habit and strength *this* hybrid resembles *T. pavonia*, the male parent; but in colour and the markings of the flower, it resembles *T. conchiflora*, the female parent; the large outer sepals, however, are of a very deep yellow, inclining to orange, and sometimes elegantly streaked with red lines; whilst the spotted centre equals, if not surpasses, the brilliancy of either of the species. One of its greatest merits is being so free a bloomer, and as easy to cultivate and increase as *T. pavonia*, whereas *T. conchiflora* is rather delicate, increases slowly, and is easily lost. I have grown the two together for some years, and whilst I can scarcely keep up a stock of *T. conchiflora*, the hybrid increases abundantly."

That *T. conchiflora* is more delicate than *T. pavonia* every person acquainted with these plants must admit; but provided the soil be light, and the drainage good, it will in most situations thrive and flower very freely in the open borders; as will also this new hybrid. We are indebted to Mr. Thomas Watkinson of Longford Nursery, Stretford, near Manchester, for the drawing, and in compliment to him we have named it.

The generic name is derived from *tigris* a tiger, and *eidos* like, in reference to the marking of the flowers.



S Holden. del & Lith

Porphyrocome lanceolata

PORPHYRACÒMA LANCEOLÀTA.

(Lance-leaved Porphyracoma.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
ACANTHÀCEÆ.

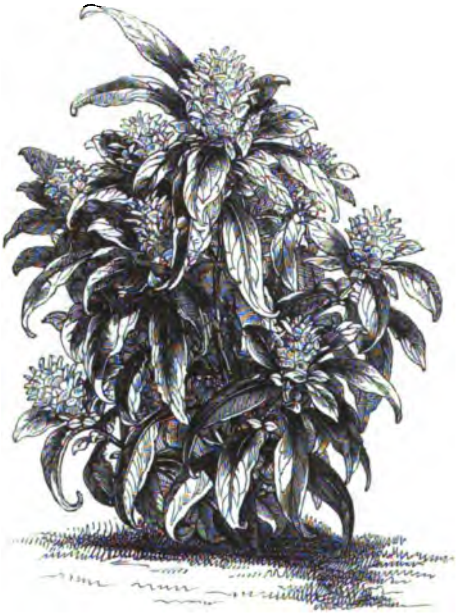
Generic Character.—Inflorescence in terminal spikes; flowers opposite to each other, with coloured leafy bracts irregularly torn; the two outer large, and the inner one small. *Calyx* diminished, five-parted, imbricated and unequally torn, persistent, free. *Corolla* monopetalous, hypogynous, tubulose, two-lipped; *lips* unequal, upper one narrower, bifid, lower one large, trifid, reflexed. *Stamens* two, both antherous, exserted from the tube of the corolla, shorter than the lips. *Ovary* ovate, seated in a disk, two-celled. *Style* one, longer than the corolla. *Stigma* obtuse. *Capsule* oblong, two-celled. *Seeds* two in each cell, round, without albumen, wingless.

Specific Character.—Perennial. *Leaves* opposite, lanceolate, slender at the base, nearly sessile, entire. *Spike* both terminal and axillary, aggregate. *Bracts*, two outside ones large, very much and deeply lacerated, of a vivid purple. Flowers purple-blue.

For a figure of this very beautiful plant, we are indebted to Mr. Glendinning of the Chiswick Nursery, in whose stove it flowered in April, 1846, when our drawing was made. It is of very easy culture, and of similar habits to many other stove Acanthaceæ, requiring light sandy soil, plenty of pot-room, and good drainage. In the season of growth, give abundance of heat and moisture, but whilst in a state of repose, keep rather dry than otherwise.

It is a plant of rare beauty, and deserves every attention that can be given it; and its general habit and form of growth, the accompanying wood-cut very efficiently displays. It is to be regretted that we are unacquainted with its native country. Most of what is known about it, was published in the "Botanical Magazine" a short time ago, by Sir W. Hooker, whose words we quote. "For the possession of this charming plant, we are indebted to Mr. Forkel, gardener to His Majesty the King of the Belgians, at Brussels, who sent it to us under the above name, but unfortunately without any history, so as to leave us in the dark as to its native country, or the author of its very appropriate name, given in allusion to the singularly richly-coloured spikes of deep purple, from within the scales of which the scarcely less brightly-coloured flowers appear. It is a stove plant, continuing to flower during the spring and summer months. It may be referred to the tribe Echmatacanthi, and the subtribe Justiceæ."—*Bot. Mag.*

The generic name is derived from *porphyra* purple, *koma* head of hair.



THE FOLIAGE—AND ITS FUNCTIONS.

THE phenomena which are referable to the leaves of all plants, whether perennial —including trees, shrubs, and herbaceous subjects—or annuals, whose course terminates with the first production of seeds, include some of the most profound mysteries of philosophy.

Yet of late years, we might conclude from the style in which these mysteries are treated, that the secrets of Nature had been laid open, that the functions of the leaves had been actually determined; and, henceforth, that a lecturer or writer had nothing to do but to expound, in set and orderly terms, the results of a few experiments which have been deemed conclusive.

The modesty of doubt may yet, however, be tolerated; and therefore, as it is the objects of these articles to excite inquiry, we shall not hesitate to present to notice the leading facts which constitute the basis of modern theory, and thus enable the reflecting to draw their own inferences.

Dogmatism we entirely disclaim, therefore it becomes a duty to appeal to the highest authority on all points of consequence. There are persons who have at command every refinement of microscopic machinery, and who add to this great privilege an adroitness of manifestation which is almost miraculous. The following description of the structure of a leaf, though general, and, of course, subject to exceptions, must have been derived from some such power of minute inspection.

"A leaf is an expansion of the bark, from whose axil a leaf-bud is developed. It is usually thin, and traversed with one or more veins, composed of woody and vascular tissue; sometimes it is fleshy, cylindrical, or nearly so. Its veins form a double stratum, of which the upper is in connexion with the alburnum, and the lower with the liber of the branch on which it grows. When leaves have been macerated long enough it is easy to separate the two strata. The veins are held together by a green or coloured *parenchyma*, which is inclosed in an epidermis, pierced by stomates or openings, supposed to be for the purpose of respiration."

A leaf is frequently found in autumn lying on or among vegetable matter, which has so communicated decay, (*Eremacausis* of Liebig,) to its *parenchyma* as to lay bare the veins, and expose their every ramification; if, according to the foregoing authority, the upper stratum is connected with the alburnum or new sap-wood of the plants, then we may safely conclude that its tissue is woody, and consists mainly of *lignin*—the base of woody fibre. By parity of reasoning, the lower stratum must be similar to the liber or yearling bark, which though ligneous is more spongy than the true wood. The positions and insertions of these supporting skeletons or bones of the leaf, seem to point to the fact that they are not tubes of conduction, though it cannot be doubted that they are so far pervious as to admit a supply of fluid for their own nutriment and growth.

The *parenchyma*, with it *chlorophyl*, (green-yellow colouring matter—a term not quite arbitrary.) is evidently vascular, admitting the interflow of every fluid or gas that is to be subjected to the laborating energy of the foliage. The pores or stomates, however placed, whether on the underside only, or on both sides of the leaf-plate, seem by their position to prove the existence of a respiratory power. That pores exist no person can doubt who possesses a microscope and is able to detach a transparent scale of the outer integument of a leaf. To dissect the tissue, to detach its external membrane, and completely to disclose the position and orifices of the pores, demands the skill and apparatus of the practised anatomist; but any ingenious person can satisfy himself of the general fact alluded to, though it should appear that our utmost powers of observation, aided by legitimate analogy, has not been quite able to determine without question or doubt whether the organism of the foliage, with its transpiratory system of pores opening to the air, is devoted to the office of expiration, inspiration, or of both, connectedly or reciprocally. Of the first-named function we are practically assured; for who could doubt, after witnessing the drops of water which accumulate upon any broad leaf, lying underneath and in juxta-position with the lower surface of a vine leaf, produced in a glazed erection, during the full sunshine, at and about the hour of noon? We mention this leaf, because it is so open to general notice; nevertheless the position of the stomates warrants the transpiratory office of almost every variety of leaves. But the phenomenon of the exudation of aqueous matter does by no means imply that water alone is exuded; gases may, and do pass through, the pores; and these are exceedingly varied in their chemical components. But of this more hereafter. The inquiry which immediately presents itself is this—Do leaves *in*-hale? do they absorb carbonic acid and ammonia from the atmosphere? is there any undoubted fact which can prove to demonstration that they possess this attractive power? Without daring to assert the contrary—on the other hand, being inclined by comparative analogy to subscribe to the received hypothesis, we are constrained to question the validity of the evidences upon which it is founded; and now hasten to refer to some statements that have very lately been made in a public lecture, wherein we read, that—

"If an acorn be put into the ground it will germinate, and progressively increase till it become 'a large oak containing thousands of pounds of charcoal.' This is a somewhat bold and delusive assertion, in so far, that the tree does not contain one grain of charcoal, properly so called—since it is evident to the most unreflecting, that charcoal is a product of the slow combustion or distillation of wood; it is the *coke* of wood. *Ligneous matter* is abundant in a tree—a natural compound of oxygen, hydrogen, and carbon, or in other words, of three great elements, that can be developed under those forms, The mind is grievously mystified by these hazardous assertions; which may be met by the simple fact, that *natural productions* rarely contain any of those substances which are developed in our laboratories. For instance, alcohol is a product of sugar, readily obtained, and merely by a change among the three elements; but there is not a particle of real alcohol in sugar, or in the saccharine juice of its cane, nor yet in its nearer relative, the *fluid sugar* of the grape.

"Observing these cautions, we proceed thus:—the tree, it is said, could not have obtained this charcoal from the ground, because the ground around the tree becomes richer in carbon during its growth; the oak, therefore, has *derived its carbon from the air.* While, therefore, the sun shines on the leaves, they have the power of absorbing the charcoal from the carbonic acid of the air; and that plants *have* this power is a well known fact, attested by experiments, which have been tried over and over again."

There it is, at this very point, that we solicit the earnest attention of our readers. Boussingault, we are told, put a branch of a vine into a glass tube while the plant was growing, and through this tube was sent a current of air containing a certain per centage of carbonic acid. This gas is easily detected by the white sediment which it produces in lime water. When the gas was passed through the tube, while the sun shone brightly on the branch of the vine inclosed, not a particle issued therefrom; or in any degree affected the lime water contained in the vessel with which the tube was connected. A number of experiments, similar in character, have been performed in Britain, and on the Continent, all tending to prove that carbon is absorbed, during sunshine, from carbonic acid, by the leaves, wherein the carbon, or elemental base of woody matter is retained, while the oxygen is liberated, and passes in a free state through the air and water which had held the carbonic acid in solution. But Nature does not act in this way; carbonic acid *does* exist in the atmosphere; but trees and their branches are free and open to the air, the sun, the dew, and other meteorological agents; they are not confined in tubes, under bell-glasses; some containing water, medicated fluid, or in contact with gases, either in quality or quantity disproportionate to their natural habits, and always exposed to sunbeams refracted through one or more glasses. Experiments so conducted, appear to be inconclusive; for, is it probable that natural results can be attainable by means or agents unnaturally applied?

That carbonic and ammoniacal gases do exist in the air may be safely asserted; for, how else could the exhalations from decomposing animal and vegetable matters be disposed of? By parity of reasoning, we may presume that plants act by attraction as purifiers of the air. But as the ground performs so important an office in all the processes of nutritious supply, and, as in the absence of terrene moisture, plants must sicken and perish, we are constrained by the paramount evidence of facts, to refer to the earth as the grand medium of supply, and still to regard with jealousy any theory based upon ambiguous experiments.

There does not exist a truly practical cultivator of the garden or field who is not certain that if his plants are dry at root they must either droop or perish in the glazed houses; this truth is above all things manifested, and by the simple fact—though others are not wanting—that, however you may flow the ground, and in addition, so saturate the air with steam, that the glass and rafters shall flood with condensed water, the dry plant will continue to flag, till its soil receive and *imbibe* to its centre that quantity of water which its specific temperament requires.

Herein also, the real skill and discrimination of the gardener are brought to the test; for, as plants differ much in their requirings, a great degree of knowledge and judgment are called for, otherwise, one subject may be swamped, while another is scarcely kept alive.

One more quotation, and then, having adduced evidences of the possible fallacy of modern theorists, we will, in fairness, give them every advantage which our own observation enables us to bring forward.

In proof, as it is supposed, that carbon is derived from the atmosphere, we read, that, "It is now pretty certain that plants generally derive their carbon from the air. A forest in Scotland, which was planted fifty years since, now contains more charcoal than it did at the commencement of the period."—(Have not all the leaves fallen yearly, and by decay produced a blackened earth?)—"Nitrogen, in the form of ammonia, is also derived from the air to a great extent, being brought down by means of rain. It (ammonia) has been detected in rain-water, when sought for, and likewise in snow, and is thus known to exist in the air. Whether all plants derive all the nitrogen they want from the ammonia of the air, is another question; it is not a well settled point, and we want agricultural experiments to decide it."

This closing and modest addition, is conclusive:—an hypothesis exists—it is of recent date—proofs are wanting; therefore the whole rests upon a conjectural basis. The lecturer, as we have seen, asserts that ammonia exists in the air; and that rain and snow conduct it to the earth. Direct experiment has, really, *proved this fact;* but, what then? Admit that every shower shall so convey a portion of that ammonia, which had been received into the atmospheric volume, during the decomposition of animal matter, and the exhalation of ammoniacal gas from heaps of manure, and the like fermenting substances; yet, if it fall to the ground, and soak into the soil with the rain or snow, which had been its solvents, does the theory of absorption by the leaves receive any support from the admission? On the contrary, the ground becoming the recipient, we should rather be inclined to think that the fluid ammonia, so situated, must enter the organism through the channels of the *roots.*

Thus far, doubt has been maintained, on the ground of what appears to be *fallacious experiments,* conducted upon *artificial principles.* But, if we recur to pure nature, free from the *experimentum crusis* of the laboratory, and its death-dealing gases, facts may be appealed to, that, to say the least of them, will confer probability upon the modern theory. First, then, there are numbers of plants, *wild* weeds of the field, uninterfered with by man; and others, *cultivated* as food or fruit, which produce a system of foliage, so vast, so infinitely extended, when compared with the stems, that it is scarcely possible to refer to any other channels of nutriment than those of the leaf-pores or stomates. Take, as one example, the common Chickweed, and compare its *hair-like,* slender stem with the numerous thicker branch-stalks and their thousands of appendant leaves. As another example, look at the Cucumber, its numerous leaders from the main stem becoming larger at every joint, till, at length, the footstalks, alone, of the most distant leaves, are, individually, much thicker than is the main stem near the surface of the earth.

Second, it is observed, that in many cases of the higher order of horticulture, that the fumes of fermenting stable manure, placed in pits, or raised in mass within a glazed erection, confers a full and healthy verdure on the leaves, which cannot be obtained by steam, either from tanks or sprinklings; witness the Pine, and Vine, in stoves or pits; the Gardenias, Gloxinias *cum multis aliis*, in floriculture. The very fact that ammoniacal hydro-carbons so produced may be deleterious in the case of Melons, and the like, supports the theory; because it proves that, as the said gases do not form within the ground, but find their way into the atmosphere of the pit or frame, the fatal effect must be the result of direct chemical action upon the foliage.

Here we close: truth is our object; but, even, while we hope and believe that a beautiful doctrine may be true, we desire to see it based on and confirmed by unobjectionable experiments.

ON THE CULTURE OF THE CHINESE AND INDIAN AZALEA.

If we were requested to name any single genus of plants which we considered the best adapted for producing a grand and varied display of flowers in the conservatory, during a period of eight or ten months in the year, and which, at the same time, were not of difficult cultivation, we should unhesitatingly name that which heads this article; for, with only ordinary management, some of the numerous varieties may be had in bloom from Christmas until the end of May; while, by a proper course of forcing at one season and retarding at another, a very splendid display may be obtained from the end of October until the following July.

The original species of the Chinese or Indian Azalea were introduced to our gardens nearly forty years ago; *A. indica* being sent from China, in 1808, under the name of *Rhododendron perdicum*, while a ledifolia, now commonly called *A. indica alba*, followed in 1819, and *A. sinénse*, of the splendid yellow species of which there are several varieties now in cultivation, was first seen in 1824. From these species some very beautiful hybrids or garden varieties were raised by various cultivators; but it was not until the introduction of *A. indica variegata*, in 1832, *latentia*, in 1833, and *Gladstanesa*, in 1835, that any very decided direction was given to the labours of the hybridiser or cross-breeder of these truly magnificent plants. From that time the progress of improvement in form, size, and substance of flower, as well as in habit of plant, has been steadily on the increase, while the few beautifully formed and marked varieties which are now annually unfolding their charms to the various raisers, promise in a short time to drive the majority of our old favourites entirely out of cultivation.

But to our task:—The Azaleas may be propagated in various ways: by seeds, to raise new varieties, and by cuttings, layers, grafting, and inarching, to perpetuate certain species or varieties. In propagating by cuttings, the slips may be taken off at any time before the plant has matured its growth; but if the cuttings are taken just at the time when the young shoot is assuming a brown colour and the wood is about three parts ripe, the chances of success are much increased; indeed, with ordinary management, rendered certain. In selecting the cuttings make choice of those of medium growth, and cut them about an inch-and-a-half long; prepare pots in the usual way, with plenty of drainage, and a layer of peat and some sand; insert the cuttings, and then cover with a bell-glass. If the cuttings, at the time they are put in, are in a growing state, they may be placed at once in a gentle, moist heat; but if the wood is nearly ripe, it will be advisable to place the pot in a comparatively low temperature until the cuttings are callosed over.

Under favourable circumstances Azaleas will generally strike in from six weeks to three months, and may then be potted off into small pots, keeping them for a time afterwards in a moist growing temperature.

Propagation by layers is but little practised, and, in fact, is a method requiring little or no skill, as, if a branch is merely bent down, covered with soil, or even enveloped in a little moss and kept warm and moist, it will produce root and a perfect plant, without further care. Although Azaleas may be propagated with great freedom and rapidity both by cuttings and layers; neither of these are practices much to be recommended, save and except to procure large quantities of the free-growing kinds to work, graft, or inarch the choicer varieties upon; and for this purpose the strongest-growing kinds are chosen, such, for illustration, as *A. indica phœnicea*, *Woodsii*, *Herbertii*, and Double Red; in fact, any of those varieties which make strong shoots, and which, as a natural consequence, make strong roots.

These then are the parents upon which the more tender and choice kinds are grafted or inarched, and the reason for grafting them is, that such varieties as *A. indica variegata*, *lateritia*, *Gladstanesi*, and their varieties, are too tender to stand or grow upon their own roots for any lengthened period; for although there are some few examples of plants growing for a number of years on their own roots, as for instance the plant of *A. variegata* annually shown at the Chiswick Exhibitions, by Mr. Falconer of Cheam in Surrey, yet this may be considered the exception rather than the rule, as, where one plant stands for seven years upon its own bottom, we may very safely assert that fifty die. And hence, grafting or inarching is our only safeguard and dependence.

Now, grafting and inarching may be considered analogous to striking by cuttings and layers, inasmuch as the graft is made to strike root upon the wood of a previously rooted plant in place of the soil, while the inarched branch strikes root on precisely the same principle, only that it is not severed from the parent plant until adhesion has taken place between it and the plant upon which the duties of the foster-parent have now devolved. Inarching may be performed any time during the growing season, and consists in merely cutting the branches of two plants so that they match, and then tying them neatly, but securely, together, and covering the wound with a little damp moss to exclude the air. Place the plant in a shaded and rather moist place; syringe occasionally with tepid water, and in a few weeks the inarched branch may be severed from the parent stem. It is advisable, however, not to reduce the foliage of the inarched plant too much at one time; but rather, after all the inarched branches are firmly established, remove a few twigs or branches weekly, until every vestige of the old plant except the stem or stool has disappeared. In this manner a large plant of an inferior kind may be quickly clothed with a more modern variety, or a number of varieties of the same habit of growth, but producing various coloured flowers, may be worked on one plant; and in this way a novel and really very interesting object may be produced.

The same desirable end above noticed, may be achieved by independent grafting; but in that case more skill is required, inasmuch as the graft requires to be kept alive until adhesion between it and the stock takes place, and hence the grafted plant must be kept in a close and moist atmosphere where evaporation from the leaves will be prevented. Grafting is the best performed either early in March or towards the end of August. If performed in the spring, take the plants or stocks, as they are generally called, into a house at the temperature of from 50 to 55 degrees; and as soon as they show symptoms of the sap rising, they are in a fit state to graft. Procure your grafts from plants in a dormant state, and, hewing out a slice of the stock, take a corresponding slice of the graft; fit the latter and the stock neatly together, taking care that the inner bark of the two correspond, and tie them neatly with some woollen thread or yarn. The plants must then be placed in a moderately moist heat in a house, pit, or frame of from 45° to 50° be covered with a hand-glass and shaded during bright sunshine. In a month or six weeks the grafts will be securely taken, and then the ligature must be loosened, merely keeping it tight enough to prevent the graft being rubbed off. When the grafts are firmly established, begin gradually to remove the head of the stock as before directed. Grafting in the autumn is performed in precisely the same manner, only at that time the wood of the graft should be about three parts ripe; and as the season is warmer, of course the grafts may be kept considerably warmer. Beware, however, of over-excitement, and recollect that great haste is not always great speed.

We will now suppose that the propagating processes have been successful, and that you have on the first of April nice bushy plants, established in large sixty-sized pots. Now, presuming that these plants are well rooted, the next operation will be to shift or repot them. For this purpose procure some nice clean twenty-four or sixteen-sized pots, and drain them well with oyster shells and some lumps of charcoal, and then prepare the following compost:—four parts by measure of rich turfy peat, one part of perfectly decayed cow-dung three years old, one part of silver sand, and one of charcoal; and if the peat is not very rich, a measure of half-decomposed leaf-mould may be added without injury. Mix and blend all these equally together, taking care not to make them too fine, and pot the plants. After the plants are all shifted, remove them to a pit or vinery, where a moist temperature of from 60° to 75° is kept, and water and syringe them freely. By the end of August these pots will be stocked with roots, and therefore they must be shifted again, giving the strongest plants eight, and the weaker ones twelve-sized pots. After this return them to the forcing-house; and as flower is not the object of the first season's growth, at least where specimens are required, persevere in your former method of treatment, and keep the plants growing until the middle of November. During the season of growth due attention must be paid to the stopping of luxuriant branches, so as to make them produce abundance of side shoots, and the branches must be so disposed as to form a uniform and compact plant.

We have got to the end of the first season; and as the enthusiastic cultivator, like the rest of mankind, now only consents to travel at railway speed, we will, having given the plants two months' rest, begin to start them again in January. At this time they should be introduced into an early vinery, just set to work on a house in which a corresponding and gradual increase of temperature is to be observed; and if any of the shoots have set flower buds, rub them all off, leaving one or two to prove the kind. During this season you must also persevere in the same method of treatment, stopping the straggling shoots when necessary, and encouraging diffuse and compact growth as much as possible. Do not however stop any of the shoots after the middle of August, but from that time endeavour to bring the plants into moderate growth so as to ripen the wood, and set the bloom. Those plants which are intended for early blooming, must be kept in heat until the flower-buds are of considerable size—until in fact on breaking the bud the faint colour of the flower can be discovered. By very gentle forcing these will bloom in the depth of winter; but when intended for late blooming the plants must be removed from the forcing-house so soon as the flower-buds are perceived, kept in a cool dry pit, merely excluding the frost throughout the winter and spring, and they will bloom in June and July.

Thus we have traced the cutting or graft from its infancy into a large blooming specimen plant, which with ordinary treatment will continue to delight you with its bloom for a number of years. The treatment in future will be simply to give them a season of growth in heat after they have done blooming, and until their bloom for the following season is set, potting them wherever it is considered necessary, and supplying them liberally during the growing season with liquid manure.

The only insects which Azaleas are subject to are thrips and green-fly, both of which may be destroyed by frequent but slight fumigations of tobacco. They also suffer occasionally from attacks of mildew, which is best removed or checked by a liberal dusting of sulphur directly it is perceived.

Subjoined is a list of thirty of the best and most distinct Azaleas which have come under our notice, and which have the further advantage of not being very expensive.

Azalea
Indica variegata
— lateritia
— do. formosa
— Gladstanesi
— do. formosa
— exquisita
— alba-striata
— Murrayana
— Broughtonii (Knight)
— do. (Smith)
— refulgens
— optima
— carminata
— coronata
— Reddingii

Azalea
Indica Minerva
— decora
— prestantissima
— aurantia magnifica
— double red
— semi-duplex violacea
— do. purpurea
— speciosissima
— Fielderii
— Penyana
— splendens
— magnifica
— ledifolium
— Smithii coccinea
— sinensis

ON THE CULTURE OF LEUCADENDRON ARGENTEA.

In how few collections of greenhouse plants this splendid growing old species is found! It has always been considered difficult to keep, and more so to propagate it; hence its scarcity: although perhaps it is not easy to conceive a more admirable object than is a large specimen of this plant.

It requires for a soil, two parts good heath-mould, and one part light sandy loam, not broken fine, but merely chopped together.

In potting, drain well with broken potsherds and charcoal; also mix pieces of charcoal and freestone about an inch square through the soil. These will retain moisture, and prevent the roots suffering immediately from drought, which they are very liable to do; they also answer other important purposes. Do not cramp the roots, as by such treatment they are sure to suffer.

Over-watering and drought are two extremes which must always be avoided; the plants cannot endure either. The roots being tender, water must be administered at all times with care, but especially in winter; drought, however, is more injurious than over-watering. The leaves being so thickly clothed with silky hairs, syringing is usually fatal to the foliage, and sometimes to the branches, it is best to entirely dispense with that operation.

Its situation in the greenhouse should always be cool and dry; heat, or an atmosphere loaded with moisture is always injurious. If placed out of doors during the summer season, they either suffer at their roots by drought from exposure to too much sun and air, or they perish from over-moisture by rain, or the roots are lacerated by the entrance of worms into the pots; or lastly, the tender foliage is scorched or bleached by the various changes in the atmosphere. Always, therefore, keep these plants in the greenhouse.

The best method of propagation is by seeds, which should be sown in March or April, and covered thinly with fine soil; set the pots in a cool, dry part of the greenhouse, where they will be shaded both from sun and wind; cover each pot with a piece of slate or glass, to prevent the soil drying too much, and by the following autumn they will be ready to plant singly into small pots. After having done so, place them under a hand-glass until they begin to grow, when they may be exposed gradually to the air of the house.

They may also be grown from cuttings; take off pieces of the ripened wood, and without in the least mutilating the leaves, plant them thinly and close to the edge of the pot in fine sharp sand. Place the pots on a dry, cool floor, and cover them with a hand-glass; water must be administered with the greatest care, and in about two months they will have formed roots. If the pots be plunged or placed in heat, success need not be expected. When struck, pot off in small pots, and again place them in a similar situation under a hand-glass, until they have begun to grow.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIOIDCALS FOR JANUARY AND FEBRUARY, &c.

Aconi'tum autumna'le. In growth it resembles *A. Napellus;* in the form of its flowers, *A. cammarum*. The flowers are lilac and white, produced in a simple spike; the smell of the blossoms is heavy and unpleasant. This species was found cultivated in the gardens of Ningpo, in the north of China, where it is chiefly prized on account of its flowering in winter. It is herbaceous, and will certainly prove quite hardy.—*Hort. Jour.*, vol. ii. p. 77.

Aza'lea squama'ta. "This fine addition to our Chinese *Azaleas* has been sent to the Horticultural Society by Mr. Fortune, who found it on the mountains of Hong Kong, as we learn from the Journal of the Society, in which is the following account of it:—'With the habit common to all the Chinese *Azaleas,* this presents the following peculiarities:—In its natural state it blooms without leaves, producing at the end of every little shoot a large solitary flower of a clear rose-colour, distinctly spotted with crimson on one side, and guarded at the base by a larger sheath of bright brown scales (whence its name). Its calyx, unlike that of the neighbouring species, is reduced to a mere five-toothed rim. Its ovary, immediately after the fall of the corolla, projects in the form of an oblong body quite covered with coarse brown hairs. The leaves, when young, are somewhat like those of *A. indica,* and have nothing distinctive in their shape or surface; but when old they are oval, sharp at each end, perfectly hairless, and as even on the upper surface as those of *Rhododendron punctatum.*" *A. squamata* is expected to prove hardy.—*Bot. Reg.*, 3.

Bego'nia fuchsioi'des. "A most lovely new *Begonia,* detected by Mr. Purdie on the Ocaña mountains of New Grenada, during his missions for the Royal Gardens of Kew. It is easily propagated by cuttings, grows rapidly, bears small but copious foliage, and is a plant to which he particularly requested our attention, on account of the copious, elegant, drooping red flowers, at first sight resembling those of a *Fuchsia;* and because it is much eaten to allay thirst, by the arrieros (mule-drivers) of the country. He also observes that the globular buds (meaning, probably, the buds of the fertile blossoms, which are globular) contain a fluid which, together with the acid of the flowers, prove highly grateful in the dry season, and where there are no rivers. It has bloomed during the autumn months with Mr. Veitch, of Exeter, and he has at this time (December 18th) one plant three feet high, loaded with the richly-coloured flowers. It has been three months in bloom, and has abundance of buds yet to expand. Our plants are now, at mid-winter, beginning to flower. It is singular that as far as they have yet blossomed the plants have proved only male-flowered, except the tall one of Mr. Veitch, which has one cluster of female flowers at the top, and of which two are represented."—*Bot. Mag.* 4281.

Be'rberis Fortu'ni. "This species is an evergreen shrub, with pretty pinnated and serrated leaves of a dark-green colour, and grows generally from two to four feet high, in the north of China, where it flowers in the autumn months. It produces its flowers both from the points of the young shoots and from the sides of the old stems; the spikes are short, generally six or seven together, and the colour of the flowers is yellow. It was found by Mr. Fortune, in a nursery garden near the city of Shanghae, and will probably prove hardy. It grows freely in common garden soil."—*Hort. Jour.* vol. i., 231.

Cala'nthe curculigoi'des. "A bright-yellow *Calanthe* is an unexpected novelty, and this species, which was previously known only from bad dried specimens, proves to be one of the handsomest of its race. The flowers have a firm waxy texture, and do not wither so soon as those of some species; they are much yellower and finer than in *C. densiflora;* all their beauty fades, however, in drying, when the species becomes one of the least attractive. The specimen now figured was the best we have seen in a living state, but it is nothing compared to what it will become. We have now before us wild specimens, collected by the late Mr. Griffith at Malacca, with ten inches of flowers, and a further part of the inflorescence is lost. It is not too much to say that the flowering spike of *C. curculigoides* may be expected to be a foot long. The species has been found exclusively in the Straits of Malacca, whence Messrs. Loddiges received it. It flowered at Hackney, in November, 1845, and may be expected to require more heat than some of the sorts." —*Bot. Reg.* 8.

Calosco'rdum nerinefo'lium. "This plant was sent to Spofforth by J. Trevor Alcock, Esq., who received it from Chusan when that island was occupied by our troops, and it has since flowered three seasons. Dr. Herbert distinguishes *Caloscordum* from *Allium, Pseudoscordum,* &c., 1, by the form and articulation of the tube, which includes the ovary; 2, by the filaments being inserted deeper, and not having a membranous dilatation; 3, by the withering style; and 4, by the recurved direction of the perianth." It is a small bulbous plant, having linear leaves, and bearing rose-coloured flowers.—*Bot. Reg.* 5.

Chiri'ta sine'nsis. A plant introduced from China in 1844, through the Horticultural Society, and of which Mr. Backhouse, Nurseryman, York, writes:—"The largest we had this season had a succession of upwards of twenty flower-stems, and some of the strongest of these had as many flowers opening in succession; the panicles being dichotomous and flowering in the axil of each fork. Some of the stems were nine inches high. The plant is easily propagated in moist sand in a warm humid atmosphere; any portion of a leaf will emit leaves and roots. The young plant will, however, be probably a year in flowering, and the progress of the scape is at first very slow. The plants succeed best in a moist stove near the glass, but require to be shaded when the sun is hot, otherwise their leaves are sometimes scorched. By having plants in different temperatures, the flowering may be kept up many months; but a common greenhouse scarcely brings them to perfection. We have not ripened seeds, the capsules having been removed to keep up the flowering."—*Bot. Mag.* 4284.

Cordyli'ne Ru'mphii. "A greenhouse plant of graceful habit, which has long been an inhabitant of a cool stove at Kew Gardens, where it bears its copious greenish-white flowers, succeeded by the orange berries, in July; but whence introduced is not recorded. The figure of Rumphius, above quoted, leaves no doubt of that being the same plant; it is consequently a native of Amboyna. Blume's description and reference to Rumphius make it equally certain that our plant is the *Sauseviera fruticosa* of that author, and consequently a native of the 'mountains of Java;' but equally certain is it that neither in habit nor in essential character can it be referred to *Sauseviera.* Its place is near *Dracœna* and *Cordyline.* If *D. Draco* be the type of the former genus, I should be unwilling to associate this with the true 'Dragon's blood;' with *Cordyline* it sufficiently accords in habit and in essential characters, save that the seeds are, in the state of the ovules, even always solitary in each cell, whereas they ought to be numerous, as shown in *Dracœna australis* (*Bot. Mag.*, tab. 2835), now referred to *Cordyline.* In all probability this plant will constitute a new genus, in which the inflated and rugose filaments of the stamens contribute to afford characters." Syn., *Terminalia angustifolia.*—*Bot. Mag.* 4279.

Cro'ci. A collection of five very curious *Crocuses* is represented in the "Botanical Register" for January, under the names of *Crocus Chrysanthus*, a small orange flower with a dark-coloured limb to its corolla; *C. nivalis*, larger than the last, but also small, for the most part violet-coloured; *C. Veluchensis*, pale and deep violet, with the sepals and petals of the flower of the former shade tipped with white, and those of the latter crimson; *C. Salzmannianus*, with large pale violet flowers, whose sepal margins are shaded white; *C. Byzantinus*, a very singular flower with violet sepals and white tipped with violet petals.—*Bot. Reg.* 4.

Cyana'nthus lobatus. "*C. lobatus* appears to be a native of the higher range of the Himalayas. It was raised in the garden of the Horticultural Society, from seeds received from Captain William Munro, in April, 1845, and said to have been 'collected in Chinese Tartary, on the Snowy Passes, at an elevation of 12,000 feet, in October, 1844.' It proves to be a delicate hardy little herbaceous plant, with small fleshy roots, like those of some species of *Campanula*." This plant is a member of a genus whose station in the Natural System is undetermined. It has small leaves alternately arranged on slender stems, which bear terminally a solitary flower, the limb-segments of whose corolla are widely spread, for the most part bluish purple with a pale blue base and tube.—*Bot. Reg.* 6.

Da'phne Fortu'ni. This charming deciduous shrub was introduced from China in 1844 by Mr. Fortune, who first discovered it in a nursery garden, near Shanghae, in the winter of 1843. It was then leafless, but having taken it to the south, with other plants, for the purpose of forwarding them to England, the warmth forced this plant into bloom before it was sent off. Returning through the northern provinces in the spring of the following year, he found it wild on many of the hills in the province of Chekiang, forming a dwarf shrub, two or three feet high, losing its leaves in autumn. In March and April the flower buds expand, and then the whole of the hill sides are tinged with its beautiful lilac-coloured blossoms, and have a very gay appearance. Before they fade, the Azaleas burst into bloom, and give those northern hills a description of beauty quite peculiar. The Chinese name is Wû-lan-ee. Like the Mezereon its bark is extremely acrid and poisonous, and is used by the natives to produce blisters on the skin, particularly in cases of rheumatism. It is easily cultivated; growing freely in loamy well-drained soil, and strikes freely from cuttings. The main points in its cultivation are—a well-drained soil, full exposure to the sun when forming and ripening its wood during the summer months, and rest during winter when the leaves fall off. Attention to these matters will always secure a fine show of bloom in the early part of the spring. It will probably prove quite hardy.—*Hort. Jour.*, vol. ii., 34.

Diely'tra Specta'bilis. This plant is beyond all comparison the handsomest of the natural order of Fumeworts. It was discovered in a state of cultivation in China by Mr. Fortune. It grows eighteen inches high, and has three or four axillary racemes of beautiful flowers, each raceme being from four to six inches long. The flowers are a full inch long, and nearly three quarters of an inch wide, with the two saccate petals of a delicate rose colour, and the intervening narrow one white with a purple tip; probably a hardy plant.—*Hort. Jour.*, vol. i., p. 233.

Dendro'bium triade'nium. "In characterizing this species, a few weeks since," says Dr. Lindley, "we spoke of it as a lovely plant, with the habit of *Dendrobium crumenatum*, but with a very close racemose panicle of flowers, transparent, about as large as in *D. aduncum*, nearly white, with a tinge of rose, a violet spot on the end of the petals and lip, and a three-lobed yellow tubercle in the middle of the latter." An East Indian species, but from what locality is unknown. Noticed at page 165 of last volume.—*Bot. Reg.* 1.

Erythri'na Bid'willii. Of the plant bearing this name the Hon. and Very Rev. the Dean of Manchester thus writes:—"This plant was sent to me at Spofforth, by Mr. Bidwell, from Sydney. I am not sure whether it was raised by himself or Mr. Macleay. It is a hybrid production, from *E. herbacea*, impregnated by *E. Crista-galli*, and is remarkable as being, I believe, the only certain hybrid papilionaceous plant we have. It is a very beautiful plant of intermediate habit. Its vigorous shoots die down to the root after flowering, and have leaves of an intermediate form approaching in colour and gloss rather to those of the Carolina *E. herbacea*. The flowers are of intermediate size and colour; but like those of *E. Crista galli*, borne by threes at the axils of the leaves as well as on a terminal spike, while those of *E. herbacea* are borne on a leafless spike proceeding from the root. I hope to multiply it by cuttings, and consider it to be a great acquisition. The figure necessarily gives a very inadequate representation of an inflorescence too large for the plate ; and the terminal spike and upper part of the shoot had failed, from an accidental circumstance in the specimen sent."—*Bot. Reg.* 9.

Exogo'nium pu'rga.—"Although *Jalap* has been used in European medicine for nearly two centuries and a half, it is only within a few years that its botanical source has been correctly ascertained. The plant long cultivated as yielding the true jalap, in the stoves of Europe, and among the rest in the Botanic Gardens of Edinburgh, is the *Convolvulus jalapa* of Linnæus and Wildenow, or *Ipomœa macrorhiza* of Michaux, a native of Vera Cruz. But, between the years 1827 and 1830, it was proved by no fewer than three independent authorities, M. Ledanois, a French druggist, resident at Orizator, in Mexico, Dr. Coxe, of Philadelphia, through information supplied by Mr. Fontanges, an American gentleman, who lived at Jalapa, and Schiede, the botanical traveller, from personal examination, that the drug of commerce is obtained, not from the hot plains around Vera Cruz, but from the cooler hill country near Jalapa, about 6000 feet above the level of the sea, where it is exposed to frost in winter time ; and that the plant which yields it is an entirely new species. Schiede introduced the plant for the first time into England ; and it has been cultivated in various botanic gardens of Germany." A tuberous-rooted twiner, with alternate cordate leaves, bearing flowers that are between funnel and salver-shaped, a purplish-red colour.—*Bot. Mag.* 4280.

Forsy'thia viridi'ssima. This is a deciduous shrub, with very dark-green leaves serrated at the margin, and grows eight or ten feet high, in the north of China. Early in spring the buds gradually unfold themselves, and present a profusion of bright-yellow blossoms, highly ornamental. It was found growing in the same garden at Chusan as *Weigela rosea.* It also grows wild on the mountains in the interior of the province of Chekiang, where it flowers equally as beautiful as when cultivated. The plant is a free grower, and easily increased by cuttings and layers.—*Hort. Jour.* vol. i., p. 227.

Hibi'scus Moscheu'tos. "This noble plant, although one of the oldest inhabitants of our gardens, is seldom seen in cultivation. According to the learned authors of the Flora of North America, it inhabits the borders of marshes, particularly near the salt water, in Canada, and throughout the United States, flowering in the months of August and September. They describe it thus : Stem, three to five feet high, minutely tomentose. Leaves about five inches long and three wide, rather obtuse at the base, with a long acumination, often with three short abruptly-acuminate lobes, velvety-tomentose beneath. Peduncles axillary, two inches long, articulated a little below the flower, often coalescing with the petiole to a considerable distance above the base. Flowers as large as in the common Hollyhock, rose colour, or sometimes nearly white, crimson at the centre. Petals obovate, retuse. Staminal column one-third the length of the petals ; styles exserted. Capsule as large as in *H. Syriacus.*" A hardy plant ; but one requiring greenhouse treatment for its successful management. Syn. *H. Palustris.*—*Bot. Reg.* 7.

'Iris seto'sa. "This very pretty plant is said, by Dr. Fischer, to inhabit the northern part of Eastern Siberia, along the Lena, about Schigansk and Jakutzk, in Kamtchatka, Unalaschka, Escholtz's Bay, Chammisso's Island, &c. Its root is said to be poisonous, but we know not on what authority. It is a very hardy herbaceous species, growing from one to two feet in height, if planted in any good rich garden soil, and freely supplied with water during the growing season ; but afterwards the plants should be kept rather dry, as they are very impatient of damp or wet during the winter months." Raised in the garden of the Horticultural Society, where it flowered last year in the month of May. Synonymes, *T. brachycuspis*, *cuspidata*, and *brevicuspis.*—*Bot. Reg.* 10.

Wei'gela Ro'sea. This beautiful plant was found by Mr. Fortune, growing in a mandarin's garden on the island of Chusan, in China, when it was literally loaded with its fine rose-coloured blossoms, which hung in graceful bunches from the axils of the leaves and the ends of the branches. This plant is peculiar to the north of China, being quite unknown in the southern provinces, and will therefore prove hardy or nearly so ; but if it should not, it will make a first-rate greenhouse plant. Mr. Fortune never met with it wild on the Chinese hills ; it is therefore possible that it may have been originally introduced to China from Japan. It forms a neat middle-sized bush, not unlike a Philadelphus in habit, deciduous in winter, and flowering in the months of April and May. It is of the easiest culture, growing freely in common garden soil, and is increased by cuttings put in during the spring and summer months.—*Hort. Jour.*, vol. i., p. 189.

PLANTS NEW OR INTERESTING, IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES AND GARDENS.

A'rum spe. Messrs. Rollisson, of Tooting, have recently introduced a very strange and formidable-looking plant from Java, the first sight of which in the case filled them with alarm; the specimen, having a serpent-like form, curved over the other plants, and being of a dingy green, mottled over with irregular spots of a lighter colour, made the resemblance to the constrictor family still greater. It is quite round, eight inches in girth at the base, tapering to the end, four feet long, and about six inches from the end it branches in two, where no doubt the flowers are produced. The plant has tuberous roots, very much resembling the Jerusalem Artichoke.

Boro'nia trifi'lla. A handsomely-grown specimen is now profusely covered with its rich roseate flowers, in the nursery of Messrs. Henderson, Pineapple Place, Edgeware Road. It differs from *B. ledifolia* by curving its foliage upwards, and being less compact in habit. The flowers are produced more abundantly, and of a deeper colour, while the tips of the petals are slightly curved backwards. It is a charming plant at all seasons, and very graceful in habit.

Burlingto'nia ri'gida. This charming species is now exhibiting its delicate rose-coloured flowers from three or four scapes, in the stove of Messrs. Rollisson's, Tooting. The plant (as in this specimen) has very distinct attractions; the habit so peculiar, from the long thin rhizoma growing erect and forming a bulb at the top, from which descend the thin graceful roots, while the flowers are so delicate in colour and fragrance that the plant attracts the admiration of all lovers of the floral race. The specimen is from five to six feet high, and growing most luxuriantly.

Came'llia Japo'nica. During late years numerous hybrid Camellias have been introduced from the continental nurseries, of anything but good properties, that it is quite a pleasure to see this noble flower in a new and good form. At the nursery of Mr. Low, Clapton, are two seedlings of excellent qualities, one a pure white (*C. Jap. alba imbricata*), of large size, petals round and of good substance, well filled up and without the ochre colour so common in the centre petals of the old double white; the whole flower lying quite flat upon the bud scales. The other seedling (*C. Jap. miniata*) is a smaller flower, but in point of shape has been considered almost perfection; it has a dazzling brilliancy of colour, bordering betwixt a deep pink and bright scarlet, and, seen either in the bud, the half expanded, or the fully developed flower, cannot fail to attract the admirers of this splendid family. The habit of each seedling is good as regards the size and colour of the foliage.

Dendro'bium spe. A new species of Dendrobium from the East Indies has lately flowered in the nursery of Messrs. Henderson, Pineapple Place, Edgeware Road, of a somewhat singular character when compared with species already in this country. The singularity consists in its having pseudo-bulbs very near one species (*D. densiflorum*), while the flowers and spike are like another species (*D. fimbriatum*). The pseudo-bulb swells out, and is more angular than *D. densiflorum;* while the flowers, though smaller, are considerably brighter in colour, and the labellum is fringed and in equal beauty to *D. fimbriatum*. The species will be a decided acquisition to this beautiful race.

Dendro'bium heteroca'rpum. This species has been exhibiting its flowers in Messrs. Rollisson's stove, and is more remarkable for the richness of its fragrance than for its beauty of colour. The petals are a pale buff, while the labellum approaches almost an orange colour, with brownish streaks down the centre; the whole covered with down, giving a rich velvet appearance to the flower. The flowers are produced on the leafless stems in various numbers, from one to three at each axil, and remains a considerable time in flower.

Dipteracau'tuus sca'ndens. A new genus under this name has lately been introduced by Mr. Glendinning, Chiswick. The plant is a climber of very handsome habit, having deep rich green lanceolate leaves produced in pairs affixed to the stem opposite each other; the stem round, smooth, and a dark-green colour. The flower spike is about four inches long, branching, and having an abundance of buds, while it expands about six white Mimulus-like flowers on each spike. The plant is a very liberal bloomer, sending its spikes of flowers both from the axils of the leaves and the ends of shoots in the greatest profusion, rendering the want of colour of minor consequence.

Franci'scea hydrangæfo'rmis. Since our figure of this plant was published, we have seen it under much better auspices, but still not at all approaching its specific character of Hydrangea-like. Under the care of Mr. Edwards, gardener to His Grace the Duke of Devonshire, Chiswick House, the plant has attained about two feet high, very compact, and producing at the top a large ball of upwards of forty flowers, varying from a lilac to a pure white, resting upon the leaves, which curve gracefully downwards. There were two or three heads of bloom besides, but of less size. We can safely recommend the plant to the notice of those cultivators who have not yet got possession of it, as being every way worthy their attention. We noticed good specimens grown compactly and flowering equally free at Messrs. Rollisson's, Tooting. The plant continues in flower for some weeks.

Habrotha'mnus e'legans. This plant is now showing its flower in the gardens of the Horticultural Society, at Chiswick, though not in very great abundance; yet sufficient is seen by the cluster of deep, shining, crimson flowers among the long bright green foliage, to make the plant one of considerable attraction. It was introduced by Mr. Hartweg, the Society's collector.

Habrotha'mnus fascicula'tus. The fine specimen in the Society's Gardens, at Chiswick, is again exhibiting its profuse masses of bloom, of a brilliant scarlet colour, proving to the letter all that was said in the description given when first illustrated in the "Horticultural Transactions." The plant has been well pruned, so as to make it a compact and handsome object, now that it is covered by its blossoms, and has decidedly a more attractive appearance than when seen last season with its long lanky branches hanging about as if growing wild.

Spiræ'a prunifo'lia flore-pleno. This is another hardy plant, introduced by Mr. Fortune, from China, bearing a profusion of white daisy-like flowers; along with it is *Spiræa pubescens*, introduced by the same collector, of equal beauty, hardy, with white flowers borne in clusters, somewhat like the common May. Both are now flowering in excellent perfection in the gardens of the Horticultural Society, Chiswick.

Staunto'nia latifo'lia. A creeper, thought to be this plant, is flowering profusely in the gardens of the Horticultural Society, Chiswick, and though not a showy plant, still, from its delicious fragrance (being equal to the orange and its rival the *Chimonanthus*), will always give it an attraction worthy the cultivator's notice. We found it standing out in the open air in the nursery of Mr. Groom, Clapham Rise, during the last two or three years, though it has never flowered there. The plant under notice is flowering in the greenhouse, trained around a wire trellis. Its inflorescence is produced at the axils of the leaves on a short spike, with about six stems radiating, on which are borne small bell-shaped flowers of a dingy lilac and pale-green colour. The foliage seems to vary very much in number, some having three, some four, while others have five or six leaflets on the stalk.

OPERATIONS FOR APRIL.

The long and severe winter is now come to a close, and although occasional frosts may yet visit us, nothing to materially retard business, either in the open air or under glass, need, for this season, be feared.

In the *Stove*, those plants which flowered during the winter, as *Euphorbia jacquiniflora*, *Eranthemum pulchellum*, *Pentas carnea*, *Poinsettia pulcherrima*, *Geissomeria longiflora*, &c., and have been cut in and set in a cooler temperature, where they have enjoyed a partial rest, will now begin to form young shoots; re-pot such as require it, and by the end of the month, let them have the full benefit of both heat and moisture to facilitate their growth. A temperature of 80 degrees by day may be considered about a mean, with abundance of moisture in the air.

In the *Orchid* house gradually increase both heat and moisture, but admit air occasionally, when the weather will permit. Syringe, also, those species which are in full growth, plentifully. Look about well for insects, and set traps for them in every direction.—Those most prevalent at this time are the common Woodlouse, (*Oniscus asellus*,) one of the most destructive insects we have, and where very prevalent is not easily got rid of; it shuns light, particularly that of the sun, and commits its depredations during the night; when the shades of evening draw near, it cautiously creeps from its place of concealment, and commences feeding upon leaves, fruit, flowers, or whatever else falls in its way; the young are at first pale-yellow, and soon become very active; when half grown they become the same colour as the parents, and are remarkably voracious; from their birth until full grown, they cast their skins several times: the common Slug (*Limax agrestis*); the white Slug (*Limax alba*); the Cock-roach, or, as it is sometimes called, Black Beetle (*Blatta orientalis*); the Thrips, (*Thrips adonidum*), a well-known and very common insect, measuring about the 20th part of an inch in length, and appearing on the leaves like small black lines; both sexes have four straight, long, narrow wings, fringed, and slightly crossed when at rest, and they are rarely seen flying; they pierce the under side of the leaves, and deposit a glutinous black fluid, which is both unsightly and injurious to the plant; the larvæ and pupæ are greenish-white, and soon become as large as the perfect insects, and in those states do equally as much injury as when they assume the perfect form; and, lastly, the *Aphides*, or plant-lice.

In the *Conservatory*, Climbers must be dressed and neatly tied up, and all plants attended to that are coming into flower, the borders and everything being kept in neat order for the spring growth.

The *Greenhouse*, also, now requires much attention; air must be supplied freely. *Fuchsias*, which have been brought out of their winter quarters, and were placed in a warm part of the house, have now attained a growing state; and those intended to make large specimens should be introduced into the Stove. *New Holland Plants* will now become very interesting. *Pelargoniums*, if any are cramped in very small pots, should be re-potted; and others top-dressed with a light rich soil, to assist them in throwing up good trusses of flowers. *Cinerarias* will now be coming into bloom; give every encouragement, by exposure to light and air, and a sufficiency of water; and let *Calceolarias* have a similar attention paid to them. The Indian *Azaleas* will, for the most part, be out of flower; let them be re-potted, and as soon as the young shoots have grown a sufficient length, select some of them for cuttings. *Camellias* now out of flower, should be introduced into an increased heat.

In the *open Flower Garden*, any *Evergreen Shrubs* yet remaining unplanted, should be got in without a moment's delay, especially if the land be light and sandy; mulch with half-rotten dung for some distance round the roots, to prevent evaporation in case of a very dry spring. Sow any *Annuals* that yet remain unsown. This is, also, the best time to plant new beds of *Violets*. Prepare the beds in the Flower Garden for receiving the plants out of pots in May. Also, now clip and dress Box edgings, as much injury from frost need scarcely now be expected. *Auriculas* and *Polyanthuses* should have their flower-buds thinned, if it is desirable to have very fine flowers. Collect together all the different sorts of plants intended for the decoration of the Flower Garden in May, and when there are deficiencies, some may yet be struck, but this must be done immediately, or the young plants will be too weak for the purpose. *China Roses*, especially the smaller growing kinds, make a splendid appearance when planted in masses; such as the *semperflorens*, *semperflorens atrorubens*, *semperflorens resplendens*, *Barclayana*, &c. When the subsoil is not naturally gravelly, there must be plenty of drainage laid beneath the bed. *Deciduous Roses* are now, too, beginning to unfold their leaves; where it is desirable to prevent their flowering until late in the season, prune the shoots back to some of the later buds, at the end of the month. Few plants are so universally esteemed and cultivated as Roses, and scarcely any have more insect enemies. Although the damage done by some is trivial, others are such wholesale depredators that considerable attention ought to be paid to them. The FIRST OF THESE, are such as *suck* up the *juices* of *plants*, and thus retard their growth; of these are two kinds of *Aphides*, or plant-lice, one called the *Aphis rosæ*, a brown species, and the other *A. rosa var.*, a pale-green one; both are exceedingly detrimental, and if not checked will effectually prevent the plants blooming. The SECOND are *Saw-flies*, several of which, in their larvæ state, feed upon the leaves, others upon the buds, and others perforate the wood. The worst of these are—

Hylotoma pilicornis, which chiefly confines itself to the China Rose, the leaves of which it perforates through and through. This insect is double brooded, the first flies appearing in May; these lay their eggs on the back of the leaves, and the caterpillars are full fed by the end of July, and spin themselves small brown cocoons amongst the leaves, tying two or three together with fine threads; and the perfect insects appear in the middle of August. This brood lay their eggs by the end of the month, which are hatched in a few days, and the caterpillars go into the pupæ state in October, and become perfect flies the following May. The larvæ are small, white, and are very common on the under sides of the leaves.

Hylotoma rosæ.—This Saw-fly lays its eggs in the young buds, and is double brooded. The first brood of flies appear in the middle of April; the eggs are laid on the branches and at the base of the buds; when hatched the caterpillars eat and do much mischief before the young branches expand; as the shoots develop themselves the greater part of the buds are destroyed, and many of the leaves also. The caterpillars are brown with a black head, and when full grown are about half an inch long. They become pupæ in June, and the flies appear in August; the second brood of larvæ go into the pupæ state in October, and become flies the following April.

Emphytus fasciatus, or red-bodied Saw-fly.—This little creature sometimes causes the plants to droop and die, without any apparent cause. The females lay their eggs early in June, on the bark of the plants, which they perforate with their long ovipositors. These eggs hatch about the middle of the month, and the small grubs immediately begin to eat through the wood, until they reach the pith; they then proceed downwards, eating the pith, until they are full fed, which takes place early in September; they then leave their places of concealment, and form small brown cocoons, which become perfect flies the following May.

Emphytus nigricans.—This fly attacks the Rose trees much in the same manner as the last, and causes similar injuries; the species is smaller than *fasciatus*, and is without the red ring on the body.

Lyda hortulana.—The larvæ of this species not only live upon the leaves, but also cut large pieces out; and each makes itself a case by fastening the pieces round its body in a spiral form.

The THIRD, are Solitary Bees, which are much less injurious than the last; one sort merely disfigures by cutting off the leaves for the formation of their nests, and the other perforates the stem for the same purpose. The leaf-cutter is called *Megachile centuncularis*, or Upholsterer Bee; the females alone, which cut the leaves, form nests for their young. The other is *Megachile ligniseca*, or Carpenter Bee, somewhat smaller than the last, but with habits very similar.

The FOURTH kind, which may be mentioned, are Beetles, which attack every part of the plants, from the roots upwards. One of the handsomest and most destructive is *Cetonia aurata*, Rose-chafer, or Brass Beetle. In fine weather, during May and June, these beautiful insects may be found in abundance about the Rose bushes, either reposing in the hearts of the flowers, or flying round, and making a considerable humming noise. The females burrow into the light soft ground near the roots of the plants, and there deposit their eggs, from the middle to the end of June. The grubs when hatched are not unlike those of the common Cock-chafer, *Melolontha vulgaris*, either in size or colour, but may be distinguished by being thinly covered with hair, which those of the Cock-chafer are not. They immediately commence feeding on the roots of any plants in their vicinity, and as they continue in the larvæ state two years, it is surprising what an amount of damage is done by them. Their cocoons are composed of earth, pieces of rotten wood, leaves, and any other similar substance within reach, which they fasten together with a glutinous secretion. In the beetle state they chiefly confine themselves to the blossoms, very dexterously cutting out both petals and stamens, probably for the purpose of obtaining honey. The other is a much smaller species, called *Octonia stictica*, or white-spotted Rose-chafer; both in colour and habits this resembles the last, but it is much less common, and therefore not so injurious.

The FIFTH kind are Moths, which of all depredators are most to be feared. Some devour the leaves, others the buds, and others the petals; whilst some of the more minute kinds merely disfigure by running little serpentine lines under the cuticle of each leaf; of this last are the—

Microsetia ruficapitella, or red-headed Pigmy Moth. The eggs of this little creature are laid on the under side of the leaves, in May and September; and the first brood of caterpillars are hatched in the beginning of June; they are then so small as to be scarcely visible to the naked eye. Each insect immediately eats into the parenchymatous substance of the leaf, every one forming a separate residence for itself, proceeding in a longitudinal direction, and carefully avoiding any injury to the outer skin of the leaf, which protects it safe from birds and the weather. About the middle of July they are full fed, being then about the sixth of an inch long, and of a dull yellow colour, with a brown head. When full grown they quit their residence in the leaves, and select amongst the spines secure places where they may undergo their transformations;

situations having been obtained, each forms a small flat white cocoon, which in a few days becomes exactly the colour of the branch; and in August the perfect moths appear. This moth measures a quarter of an inch, when the wings are expanded, all four of which are dull white. The second brood are full fed and become pupæ at the end of October, and the moths appear on the following May.

Microsetia sericiella, or Satin Pigmy Moth, is another leaf miner; in dry seasons these become very prevalent upon China Roses trained against walls; their mines presenting the appearance of brown spots upon the leaves. The caterpillars scarcely exceed the eighth of an inch in length when full grown, are of a dirty brown colour, with a dark head, and go into the pupæ state in October, and the perfect moths appear the following June; the colour of this little creature is blackish-brown with a silky gloss, and measures a quarter of an inch when the wings are expanded.

Lozotænia rosana, or Rose Leaf Roller.—This is a small but very beautiful moth, measuring, when the wings are expanded, about half an inch. The first pair have a yellow ground, and are closely netted with red, and crossed with three red bands; the lower wings are dull black, and the abdomen corresponds. The eggs are laid about the end of June, and the young caterpillars feed upon the leaves and buds until the end of August, when they form small brown shining cocoons on the under sides of the leaves, which they roll up, and tie fast with silken webs. The buds inhabited by these caterpillars are easily distinguished, as they are unable to expand, and a small perforation is discernible on the side.

Lozotænia lævigana, or smooth oblique Bar.—Perhaps no species does more injury to the buds than this; in habits, colour, and size, it greatly resembles the *L. rosana.*

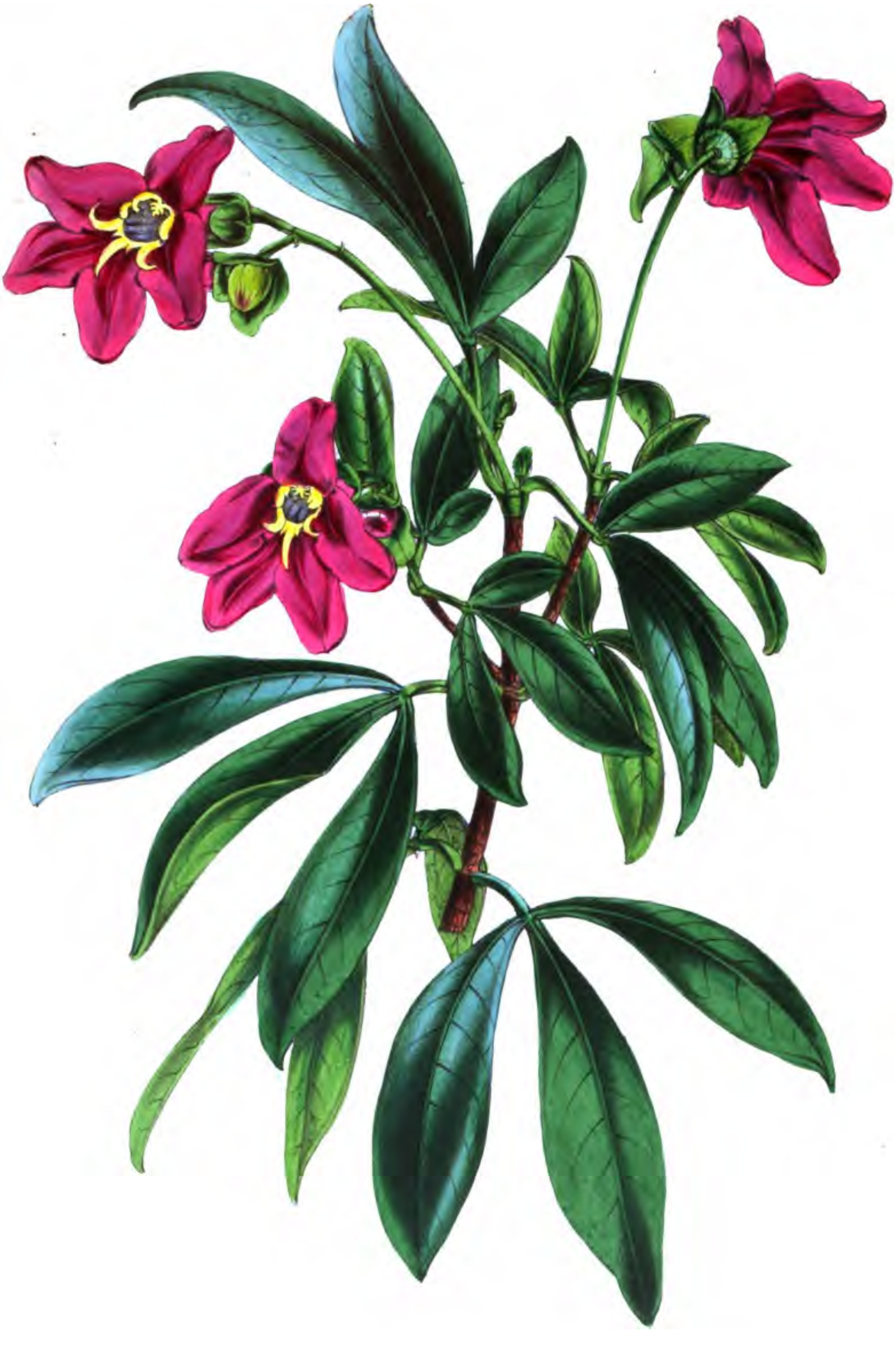
Lozotænia operana, or Great Hook Tip, appears at the same time as *L. rosana*; it seldom attacks buds, but is a voracious leaf eater. The perfect moth measures, when the wings are expanded, one inch. The first pair bright red, netted and clouded with rust colour; and the second pair yellow orange shaded with brown.

Spilonota cynostabella, or Black-cloaked-Moth, is another species very injurious to buds: it also ties four or five leaves together and forms within them a thick silken web, where, when full fed, it becomes a pupa, and the perfect insect appears in September; the expansion of its wings is three-quarters of an inch. The first pair are black and white; second pair, dull black.

Spilonota aquana, or Brown cloaked Moth, chiefly feeds upon the leaves, and seldom becomes sufficiently numerous to do much injury.

Argyrotoza Bergmanniana, or Silver-arched Moth.—This little creature measures, when the wings are expanded, about half an inch. The first pair are yellow, clouded with copper, and obscurely netted with the same, having four slightly carved streaks of silvery dots; the second pair are brown with yellow fringes. This is one of the most plentiful moths we have, being found in every garden, in all parts of the kingdom, during July and August. The caterpillars are brown with a black head, and covered thinly with hairs. When the buds begin to unfold themselves, in April and May, the little caterpillars feed voraciously upon them, and effectually destroy the petals; when disturbed they run backwards, and descend quickly towards the ground, by means of a web they spin from their mouths. When about to become pupæ, which happens about the end of June, each spins a thick web within the folded leaves, casts off its caterpillar's skin, and incloses itself in a small brown cocoon; in this state it remains until the end of July, and then appears in its winged state. The eggs are laid shortly afterwards, at the base of the buds, and if not eaten by "Tits," and other insectivorous birds, during the succeeding winter, they become larvæ the following spring.

Pterophorus rhododactylus, or Rose Plume Moth, is also a great feeder upon the leaves; this is one of the plume-winged species, measuring nearly an inch when the wings are expanded. The first pair are yellow, and consist of two plumes; the second pair are each divided into three plumes.



S.Holden del. & Lith.

Lemonia spectabilis.

LEMÒNIA SPECTÁBILIS.

(Showy Lemonia.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
RUTÀCEÆ.

Generic Character.—*Sepals* five. *Petals* five, connate, *limb* unequal, *tube* straight. *Stamens* five, inserted in the tube of the corolla, two fertile ones sessile, three sterile ones horned, longer than the tube, covered with glands. *Disk* cup-shaped, notched. *Capsules* five, each one-seeded.

Specific Character.—An evergreen shrub. *Branches* downy; *leaves* petiolate, divided into three leaflets; *leaflets* obovate, obtuse, smooth, deep green and shining. *Racemes* axillary, containing only two or three flowers. *Flowers* rich and deep rose-colour. *Calyx* consisting of five green sepals, inclosed within a two-valved involucre. *Corolla* monopetalous; tube straight, slightly oblique towards the top, *limb* expanded, in five parts.

This fine stove plant was introduced from Cuba in 1839 by Messrs. Loddiges, in whose nursery good flowering plants may be seen at any time, and to whom we are indebted for our present figure. Since we made our drawing, our own plants at Chatsworth have flowered; and from the prolonged flowering season and the rich colour of the blossoms, the plant deserves to be in every collection.

The cultivation is easy: the best soil is two parts sandy heath mould, and one part loam, with a small portion of rotten manure; the whole being mixed and broken together without being rendered fine. During the growing season, strong heat and great humidity, with considerable shade, are requisites for successful growth. In winter, during the season of torpidity, the soil should be kept partially dry, and the plant stand in a cool place.

The generic name is given "as a slight acknowledgment of the great benefits conferred, not merely upon science in general, but upon Botany in particular, by the large and well-directed liberality of Sir Charles Lemon, Bart., M.P., whose garden at Carclew, near Penrhyn, in Cornwall, has been for many years a fruitful source of new and interesting plants."—*Dr. Lindley, in Bot. Reg.* vol. xxvi., page 59.

PTEROSTÍGMA GRANDIFLÒRUM.

(Large-Flowered Wingpoint.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
SCROPHULARIÀCEÆ.

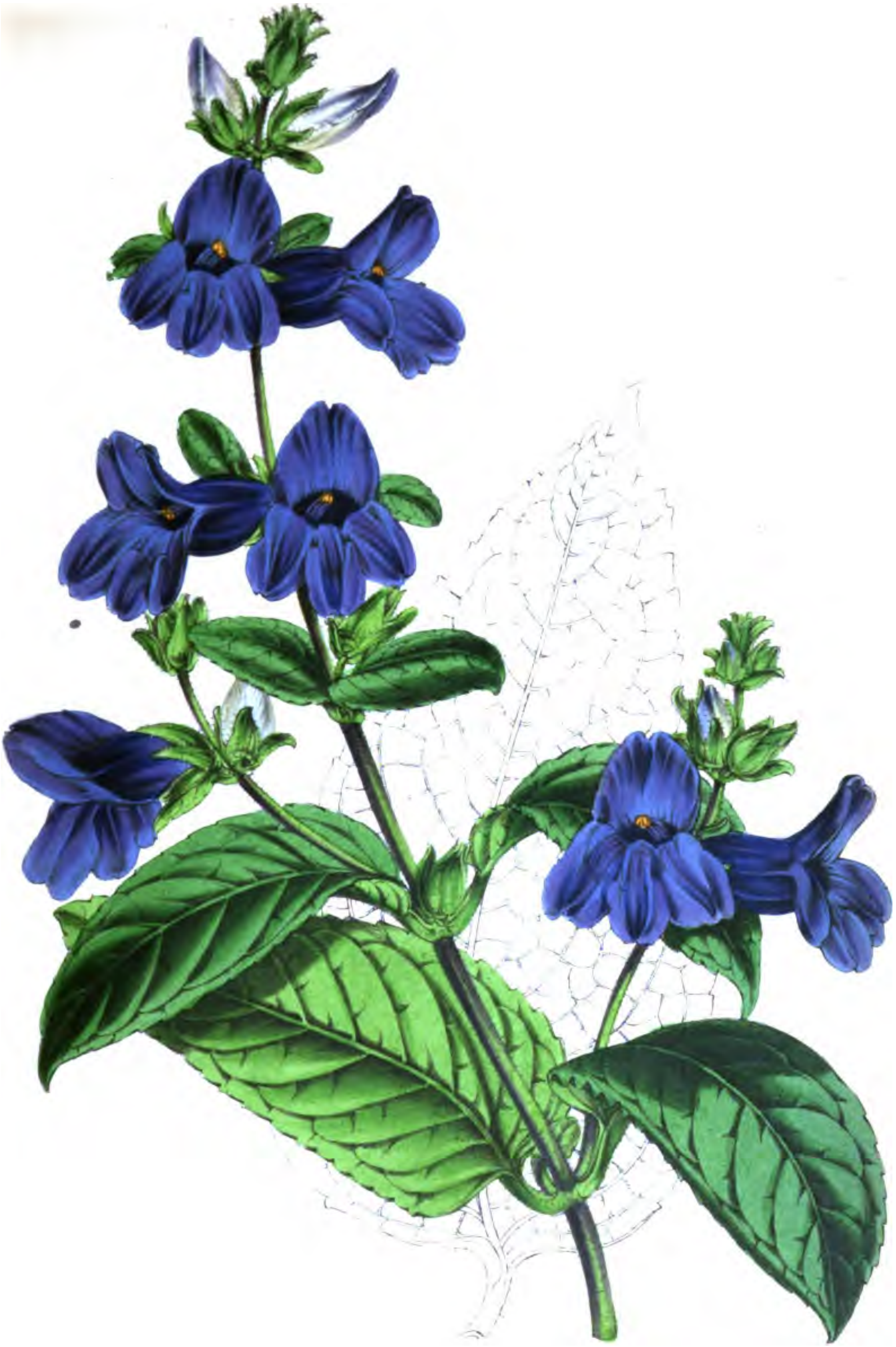
GENERIC CHARACTER.—*Calyx* five-parted or five-toothed, sometimes with outer bracts seated close to the sepals. *Corolla* monopetalous, hypogynous, two-lipped; upper lip emarginate, lower divided into three or four lobes. *Stamens* four, inserted in the tube of the corolla. *Anthers* two-lobed or two-celled. *Ovary* two-celled. *Style* simple. *Stigma* undivided.

SPECIFIC CHARACTER.—Perennial. *Stems* round; *leaves* opposite, ovate, notched. *Flowers* tubular, violet-purple. *Calyx* five narrow green segments, having three bracts seated immediately outside of them, broader than the segments of the calyx. *Corolla* two-lipped; upper lip broad, and notched in the middle, lower lip divided into three segments. *Stamens* only two, fertile.

THIS desirable perennial has been lately introduced into our gardens from China, by Mr. Fortune, who "found it growing on hill sides and near streams in the Island of Hong-Kong." It is of easy cultivation, and will grow freely in any light soil where it has good drainage. Usually it has been grown in a pot as a stove plant, but it will probably be found to thrive much better in the greenhouse. It grows eighteen inches or more high; and although not very showy, is yet well deserving of cultivation. Its situation in the house should be one where it is not too much exposed to bright sunshine, as it seldom thrives under those circumstances. Increase by division of the roots and by seeds.

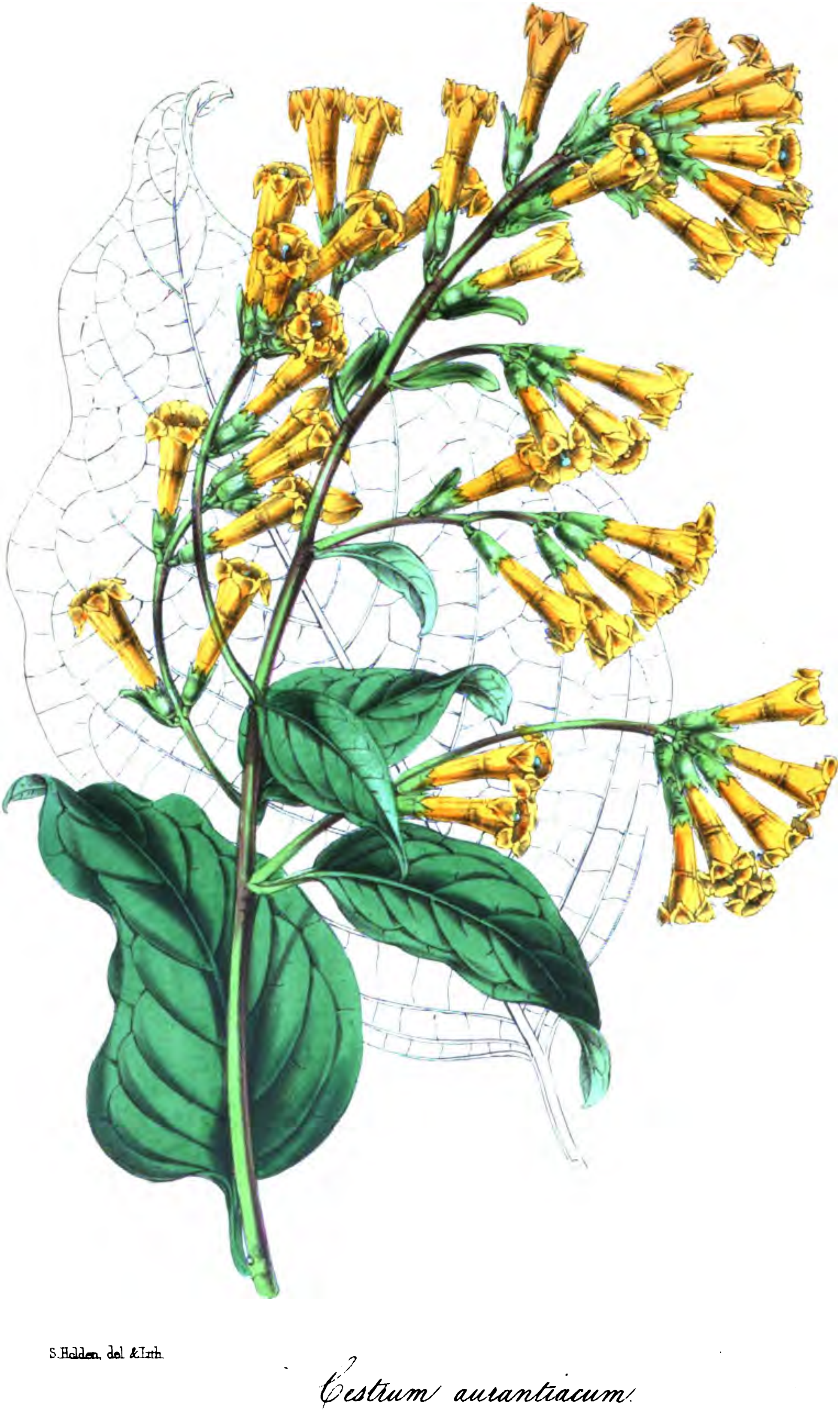
The plant from which our drawing was taken flowered in the stove of G. Lorraine, Esq., Wallington Lodge, Carshalton, Surrey.

The generic name is given in allusion to the singular form of the stigma, (which ends in a thin broad plate, curving forwards, and forming a stigma on its anterior edge,) from *pteron*, a wing, and *stigma*, a point.



S Holden. del & Lith.

Pterostigma grandiflorum



S.Holden, del &Lith

Cestrum aurantiacum.

CÈREUS GRANDIFLÒRUS MAYNÀRDI.

(Lady Maynard's Great-flowering Cereus.)

Class.
ICOSANDRIA.

Order.
MONOGYNIA.

Natural Order.
CACTÀCEÆ.

Generic Character.—*Sepals* numerous, imbricated, adnate at the base of the ovary, joined in the form of a long tube; exterior sepals short, interior long and coloured. *Stamens* numerous, joined to the sepals within the tube. *Filaments* long, filiform. *Style* filiform, multifid at the extremity. *Fruit* a succulent, one-celled, many-seeded berry, covered with *areoli* or tubercles of spines. Succulent shrubs, with angular stems, and showy, but fugitive, sessile flowers.

Specific Character.—*Stems* creeping and extending to a great length, branched, cylindrical, with from five to seven angles, the angles bearing numerous small tufts of a woolly substance, intermixed with six to eight short setæ. Copious radicles are thrown out from various parts of the stem, even when the latter does not come in contact with the soil. There is no trace of leaves of any kind. The flowers are lateral. The *bud* is at first globose, acute, then clavate, sessile, covered with imbricated scales, bearing long setæ. When fully expanded, the flower is a span across; the *tube* of the calyx long, green, the *limb* cup-shaped; the former is composed of the united imbricated scales above mentioned, the latter is formed of the long, spreading, tawny-orange, upper segments of the calyx, forming a sort of ray, and of an inner series of calyx-segments or petals, which are oblong, broader upwards, nearly erect, and of a pure white colour. *Stamens* numerous, long, at length inclined to one side. *Filaments* white. *Anthers* linear-oblong, yellow. *Style* as long as the stamens. *Stigma* of many rays.—*Sir W. Hooker*.

Maynardi.—*Stems* creeping, angular. *Flowers* when expanded, equal in size to those of *C. grandiflorus*. *Tube of calyx* shorter than that of the species, green, tinged with dull red. Outer segments of the limb narrow, inner segments somewhat broader. Colour a uniform deep orange-red, without any violet hue.

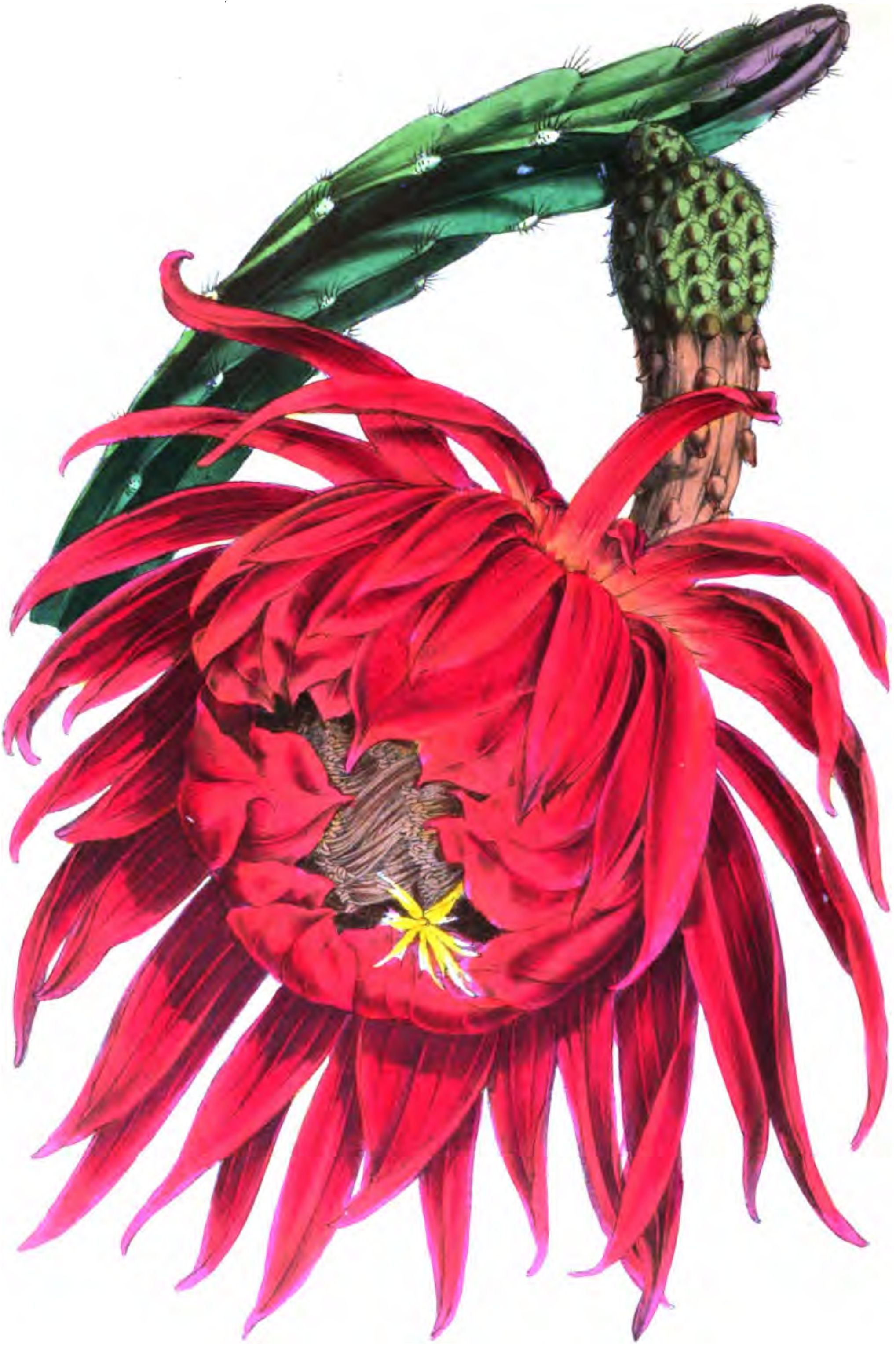
The whole of the species of Cereus are highly prized, not on account of their form of growth, for the plants merely consist of a few leafless, angular, fleshy stems, having a smooth shining epiderm, with a very small number of evaporating pores, and covered with tufts of sharp-pointed spines, which readily penetrate the skin. Their beauty consists in the flowers, which are large and showy, of colours varying from the most brilliant crimson, as in *C. speciosissimus*, to red, as in the subject of the present plate; and to yellow and white, as in the *C. grandiflorus*, or Night-blowing Cereus, as it is usually called. The flowers of all are very fugitive, but by a constant successive opening, the blooming season is prolonged, and the plants are thus rendered conspicuous objects.

For brilliancy of colour nothing can surpass the splendid crimson and cærulean blue of the flowers of *C. speciosissimus*; but those of the *C. grandiflorus* possess a delicacy and splendour which is not easily equalled. The flowers usually begin to unfold themselves about six or seven o'clock in the evening, and by ten o'clock at night their beauties are displayed, and a most delicious fragrance emitted; towards the dawn of day they begin to close, and by nine or ten o'clock the next morning they are withered and dead. The final closing of these flowers may be retarded for two or three days when separated from the plants. Cut off the bud before it is fully open, and stick the end in wet sand, and set it in a cool and shady place in the stove; or as soon as they are expanded, cut them off, and then with sealing-wax make the wound secure; suspend each in a large jar, place in a cool situation, fill up the vessel with clean cold water, and cover down with a lid.

C. grandiflorus Maynardi was raised in 1837 by Mr. Henry Kenny, gardener to Viscount Maynard, at Easton Lodge, Dunmow, Essex. A flower of *C. speciosissimus* was fertilised with the pollen of *C. grandiflorus*. The habit is trailing, like *C. grandiflorus*, and like that species, its flowers always open in the evening; but they continue expanded about three days, and are in size from nine to eleven inches in diameter, and from seven to nine inches in length, from the base of the tube to the expansion of the sepals. It flowers equally as freely as *C. speciosissimus*. The wood and spines are intermediate between the two species, and very distinct from any kind previously raised.

For our drawing we are indebted to Messrs. Hugh Lowe and Co., nurserymen, Clapton; in whose collection of greenhouse plants it flowered early last spring.

The generic name is from *cereus*, flexible, in allusion to the stems of several of the species. *Maynardi* is given in honour of Viscountess Maynard, who is a great admirer of flowers.



S. Holden, del. & Lith.

Cereus grandiflorus Maynardi

CÉSTRUM AURÁNTIACUM.

(Orange-coloured Cestrum.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
SOLANÀCEÆ.

GENERIC CHARACTER.—*Calyx* tubular and campanulate, five-toothed. *Corolla* funnel-shaped, limb plicated, five-parted. Stamens inserted in the tube of the corolla, without teeth. *Fruit* a one-celled, few-seeded berry.

SPECIFIC CHARACTER.—Deciduous shrub. Stem and branches smooth; *leaves* petiolate, ovate, acute, undulate on the margins; *flowers* sessile, produced in axillary and terminal spikes. *Calyx* pale-green, five-toothed, acute; *corolla* bright orange-yellow, funnel-shaped, contracted at the mouth of the tube; *limb* five-parted, much reflexed. *Fruit* a berry, pear-shaped.

THIS beautiful deciduous greenhouse shrub is a native of Chimalapa, in Guatemala, where seeds of it were collected by Mr. Skinner, who presented them to the Horticultural Society. When in flower the plant is a very striking object; the blossoms are produced in great profusion, and have a delicious fragrance. Their colour is a very bright orange. In winter, when the branches are divested of leaves, a number of white pear-shaped berries make the plant still an object of attraction. The specimen from which our drawing was made, was beautifully in flower during last September, in the fine collection of Sir G. Warrender, of Cleifden.

The greater part of the species of *Cestrum* are stove plants; but the present subject, *C. acuminatum*, *C. undulatum*, *C. cauliflorum*, *C. citriflorum*, and *C. venetatum* grow in the greenhouse. The culture of the whole is very simple and easy. The stove species may be potted in any light sandy soil, or sandy heath mould and light loam mixed and partially broken. In the season of growth they require plenty of heat and moisture, but in the winter to be kept cool and rather dry. The only difference in the treatment of greenhouse species is in the temperature: during the summer turn them out of doors with other hardy greenhouse plants; they will then grow short-jointed and show abundance of flowers. *C. aurantiacum* is the only showy species yet introduced.

The flowers of most of the *Cestrums* are highly fragrant, but the berries of several are fatally poisonous. Some are used in medicine, and others in the arts of life. Amongst the first may be mentioned the *C. venetatum*. The juice of the berries of this species is stated on good authority to be one of the ingredients in the formation of that deadly mixture with which the Bushmen of South Africa poison their arrows. The *C. nocturnum* possesses a most delicious fragrance during the night, but its berries are nearly as fatal as the last. *C. macrophyllum* is another species so violently poisonous, that it would be quite unsafe to rub the juice of the berry over the skin, lest it should come in contact with any wound, when the effects would be serious.

Of the kinds used in medicine are the *C. Parqui*, a native of Chili, and introduced many years ago to this country, well known for its very offensive smell; *C. auriculatum*, another old inhabitant of our stoves, originally brought from Peru, where it is known by the name of *Heduinda:* this plant emits a delightful fragrance by night, but during daylight is very offensive; it is highly prized by the native Peruvians. *C. laurifolium*, a native of the West Indies, introduced to this country in 1691, is another of these useful medicinal plants.

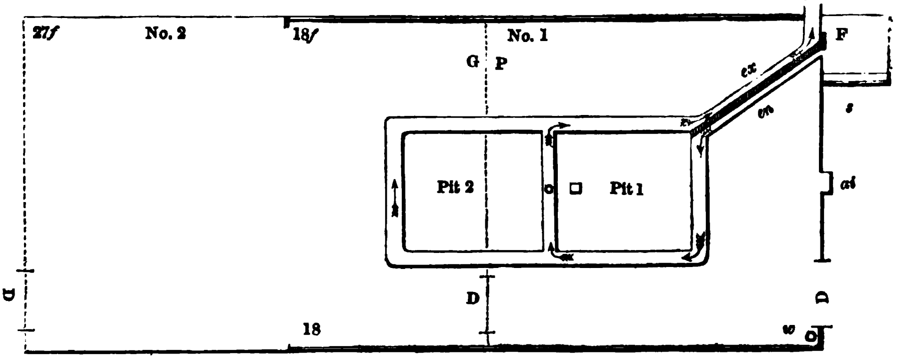
Of the kinds used in the Arts, *C. tinctorium*, a native of the Caraccas, ranks first; the juice of its berries yields a rich blue dye, exceedingly durable, and which is also used as ink. *C. vespertinum* is another species yielding a similar dye, but the colour is neither so bright nor so durable.

The origin of the name is unknown. *Cestrum* was the Greek name for Betony, but what this plant was is uncertain.

MODIFICATION OF POLMAISE HEATING.

It is contrary to our adopted rule to make any allusion to former articles; yet, in the present instance, it has become necessary to deviate, in order to convey a correct idea of what, upon conviction, appears to offer a great improvement in the construction of propagation-houses, and indeed of every glazed erection designed for the purposes of forcing.

We refer the reader who possesses the back numbers of this Magazine, to page 253, No. 143, of December 1845, for the mere ground outline of a vinery and its flue, which at the first slight inspection struck us as being the most complete mode of any simple erection that had ever met our notice. At that period the flue had not been tried; the party who planned the arrangements had proceeded in detail, his first object being to amuse himself with a few flowering plants, and at the same time to procure, by simple protection, a superior crop of grapes. The house, therefore, was without a flue at its first erection; it was lofty, with back and front moveable, swing lights, fixed roof, side-sashes, and rather low walls, so that in fact it was as light and airy as the best glass and the first order of workmanship could render it. It was, however, soon discovered that a flue was essential, and the one which formed the subject of the plan alluded to, was erected. Since then a further addition of two extra lights has been made, and as the building is now perfected in all its parts, and that portion of the flue and its appliances which bear upon the proprietor's immediate objects are in full operation, we must enter into a more minute description of its capabilities; and, in the first place, recur to the plan:—



By the annexed simple outline, we hope to prove the legitimacy of our title, and thus to demonstrate that every available principle of the "Polmaise System" of excitation may be brought into practice in a manner equally safe and beneficial, divested of all the risks which must arise from masses of brick-work containing fuel in a state of intense combustion, with their appendages of iron plates and other radiating surfaces of dry heat, which require the qualification of wet blankets. What we, and every cultivator of ornamental or fruit-bearing plants require, is an atmosphere equable in its temperature, and rendered moveable, not by currents of cold air, but by the interchange of air from *without* (warmed in its approaches) with *that within*, which has already been brought to the desired heat by the operation of the flues or hot-water machinery of the erection.

Referring to the ground-plan, it is seen that the portion which terminates at the mark 18 *f*, represents the original extent of the house as we described and figured it in December, 1845:—No. 1 is a part separated now by a glazed partition (G.P.) put up last Christmas, with the object of forcing the plants contained therein by the whole power of the flue; and therefore, in conformity with that object, the course of the heat is cut off from the left division of the flue, and passes around the right-hand pit exclusively, as indicated by the two darts near *o*.

No. 2 includes the addition lately made, and also that part of the original building, which with about two-thirds of the left-hand pit (2) is separated by the dotted line marked G. D. Thus the house comprises two departments; one, the smaller, that can with facility be brought up to full pine temperature, or if devoted to ornamental purposes, to that degree of heat which will be suitable to the cinnamon (*Cinnamomum verum*) and other tenderest plants of the tropics; while the other and larger may be either used as a simple greenhouse, or otherwise so warmed as to favour the culture of the hardier subjects which we meet with in ordinary plant-houses.

These arrangements, desirable as they always are, especially when effected with the chaste elegance which has been displayed in the present instance, would not have elicited our remarks, since it is by no means uncommon to meet with graperies and plant-houses so divided by glazed partitions. But here we find that by the ingenuity and happy forethought of the proprietor, the very essence of the "Polmaise System" has been exemplified, and its principles reduced to practice by the simplest contrivances, while the house has also been supplied with rain-water in a way equally novel and convenient.

F, in the plan indicates, as before stated, the position of the furnace and stoke-hole. It was described in the former article, and comprises all that is and was the object of the talented projector, as to the surfaces radiating heat. The furnace, which is nothing more than a well-built common brick oven, is provided with a *close-fitting ash-pit* door. From the furnace there passes a diagonal neck (*en*) a little more contracted at its outlet from the fire, and it enters the *flue proper* at the angle marked by the first curved dart; this flue is built of three bricks on edge pargeted within; it is elevated by a wall of bricks underneath it, and forms two pits, which are fully a yard deep, and therefore prepared to receive a mass of leaves, dung, tan, or other material, which may suit the purposes of the gardener. As the flue enters, so also in like manner it carries its smoke by a corresponding diagonal return channel (marked *ex*) into the chimney, which is erected at the north-east corner of the building.

The house was built originally for a cool or late vinery; but when it became the object of the proprietor to excite one department, and to leave the larger division as a cool house, he determined to see how far it might be possible to keep up a constant interchange of air, without lowering the temperature of the house, by the ingress of a current of cold air from without.

To effect this purpose, the pit No. 1 was covered with loose boards, so correctly fitted as to confine the air within, heated by the flue, and to permit none to escape, excepting by a square opening (marked ☐) about six inches in diameter, and raised an inch or two above the surface of the boarding by four strips of wood; this covering, and indeed every part of the woodwork, is painted pure white, rather flatted, which, with the predominance of fine glass, produces an effect of lightness that is very uncommon. At the mark *ai* is made a trough or channel of wood, that can be closed by a sloping flap with hinges, when not in use. It stands level at top with the eastern side-light, and passes below the surface of the ground, where it is connected with a series of six-inch earthen pipes, which enter the pit No. 1, but pass no further than the inner surface of the pit's wall; and thus the air of the external atmosphere may be made to enter the pit, or be taken off at pleasure. Finally, at the circular mark O at *w*, is an orifice made at the level of the ground, close to the south-east corner, between the east door and the front wall; it passes through the wall, and is connected with a course of six-inch earthen tubes which are led with a gradual downward slope under the ground outside, but very near the foundation of the wall, and enter the ash-pit of the furnace; thus completing the aerial circle.

Having witnessed the lighting of the first fire, and been a party in the operation, the perfect action of the draught by the flue and chimney was ascertained without a doubt. When a certain time had elapsed sufficient to bring the flue of the first division to a degree of sensible heat, the *ash-pit door* was completely closed and the flap *ai* raised to admit air by that channel into the pit. The fire, therefore, could no longer be excited by any external current; it must and did receive its entire supply of air through the channel of the earthen tube which had its origin at O, close to the south-east corner. Yet the fire drew perfectly, the smoke passed through the chimney-pot with decision, insomuch that, when the masonry became heated, it was necessary to check the draught by pushing in the chimney-damper. Another proof of successful operation was required, and that consisted in holding a slender shaving of wood over the opening, (marked ☐). It moved up and down, thus proving the existence of a gentle stream of air passing to and from the pit upwards, and *vice versâ;* and as the ascending air communicated sensations of warmth to the face when presented at some distance above the orifice, the chain of proofs became completed; and thus, if we comprehend the proposed object by the advocates of "*Polmaise,*" a current of warm air, refreshed and renewed by the admission of the external atmosphere, has been obtained, and constantly kept up, by *the simple machinery of a fire-flue.*

We read of very low degrees of heat under the action of the genuine "Polmaise" apparatus; but by the machinery in question, about four o'clock in the afternoon of the 2nd of March, the maximum temperature of the air being about 40°, *that* of the house was read off from a self-registering "Six" thermometer, at above 65°, and that too under the action of the first fire, lighted only three hours before.

This was extraordinary, as has also been the subsequent progress of the plants. So complete, in all it parts, is the furnace, the flue from its entrance to its final exit, and the circulation of renewed air, that, while no part is hot or oppressive, the utmost equability of high temperature, (we saw it at 80° in the third week of March,) is regularly maintained. Little else is burnt than small cinders called "breeze"—obtained by screening the ashes bought for the farmers—and very small coke. The fire is found alight every morning, and is kept on all day without trouble.

When it is considered that the burning fuel is of so low a character, and that combustion is supported by the air which passes from the house into the ash-pit, it will be evident that a great effective and economical plan has been discovered, and brought into permanent operation.

But another circumstance of practical utility yet remains to be described: the house required soft water, and this was to be obtained by rain only. There were no conveniences for the admission of tanks, and the proprietor determined to have a quantity within the vinery. He therefore ordered his workmen to make a zinc cistern, which was, for the convenience of approach, to be placed upon, or just above, the diagonals *en* and *ex*. Into this cistern the rain which should fall from the glass roof was to be conveyed by zinc channels fixed along the entire front, and connected with a tube that passed down to the ground, entered the house below and beyond the door, and then rose to within two inches of the top of the cistern, where it was connected, by an adapting brass screw, with the tube that was soldered into the cistern. The workmen declared that no supply could be so obtained; however, the plan was adopted, and the first smart shower filled the cistern to overflow. Additional space was required; therefore, a second cistern was put up at the outside corner, where the supply tube makes it fall from the front gutters.

It only remains to give an outline of the charming erection, which combines so many advantages. It faces nearly due south; the back rests upon a low party wall about five feet high; all above that is glass, consisting of light, swing, upright sashes made to act with perfect facility by the means of ropes and pulleys, governed by regulating weights; the house, therefore, is well lighted behind, and its slope is commanding, but not steep. The south front consists of a three-foot wall, on which rests a curb and a series of sashes, moving by means of hinges fixed on the plate close under the roof-lights; and these are made to open to any required extent by curved catches of iron, pierced with holes at different distances. The sides are glazed also, so that the four aspects command all the sun that can by possibility reach the building.

Everything has succeeded; and therefore we may be permitted to hope that this very imperfect description of a plan that we believe to be perfectly novel in its chief feature, may yet be rendered available to many who have been mortified by repeated disappointments; and also that others, who hesitate to incur certain heavy expenses at a very serious risk, may be encouraged to try what can be done by the application of principles which combine all that is by possibility good in the system termed the *Polmaise*, without any of the inconveniences which are attached to every one of the modes of adaptation hitherto described by its numerous advocates.

CULTURE OF DILLENIA SPECIOSA.

THIS splendid plant is a native of the East Indies, and bears large, showy, yellow flowers. In its native country it grows to a good-sized timber tree; but in our stoves it is found as a small shrub, often with its leaves brown, and, apparently, scorched, as if for want of water.

Strong heat and shelter from direct sunshine are requisites for its health. If the temperature sinks below 60 degrees the leaves will show it, and probably fall off; or if exposed to the direct rays of the sun the leaves curl up and die at the edges. The best way is to allow it to stand at the warm end of the stove during the growing season, where it will be well shaded with other plants.

Care must be taken, when the houses are fumigated with tobacco for the destruction of aphis, that this plant be not subjected to the smoke, or the leaves will be sure to wither and drop off.

The soil most suitable for it is composed of two parts light rich loam, one part heath mould, and one part very rotten leaf mould; break and mix the whole together, but neither sift nor make it fine, but rather leave it in lumps with plenty of fibre, and always take care there is a good drainage.

Give a liberal supply of water at the roots when the plant is in full growth, and also give repeated syringings; but during the dark weather of winter, keep rather dry than otherwise.

Propagation may be effected by ripened cuttings, planted in a pot of sand, and plunged in heat under a handglass; but by no means cut off or shorten the leaves, or success will be very precarious.

NOTES ON THE CULTURE OF GUSTAVIA AUGUSTA.

THIS fine plant, although introduced nearly half a century ago, is at present found in very few collections, although from its beauty it deserves universal attention. It is a myrtaceous plant, and bears white flowers.

The culture is, upon the whole, simple and easy; but a strong and very moist atmosphere is requisite during the growing season, and in winter the temperature must never sink below 60 degrees; and but very little moisture must be supplied.

The soil in which this plant should be grown is composed of equal parts of heath mould and light rich loam, merely mixed and slightly broken together; drain with crocks, bits of freestone, and a few pieces of charcoal.

Propagation is effected by half-ripened cuttings, which should be planted in sand and plunged in heat in the propagating house, or other close atmosphere.

PRACTICAL HINTS ON THE MANAGEMENT OF A FEW SELECT CLIMBING STOVE PLANTS.

Although there are but few persons who are not enthusiastic admirers of the finer kinds of stove climbers, yet, strange as it may appear, it is only in the hands of, comparatively, a few cultivators, where we find them so managed as to secure a proper development of their varied floral charms in all their pristine loveliness and beauty. Take for illustration that most charming of all beautiful plants, *Stephanotis floribunda*, and examine the pot specimens of it in the collections of any twenty cultivators in any county in England, and for one plant which you will find bloomed so as to merit the specific distinction given to the plant, that of "abundant flowering," you will find ten plants scarcely blooming at all, or so meagrely as to render them almost unworthy of house-room. Look over the plants and you will find them clean and healthy, and for the most part in vigorous growth; if you interrogate the gardener, he will probably tell you the plants are almost constantly growing very freely, and yet show little or no disposition to bloom. Look again over-head, at a plant growing in one corner of the bark-bed, with its branches trained to the rafters, or other parts of the roof, and you will see, streaming carelessly, or hanging in graceful festoons, branches smothered with flowers at almost every joint, and forming a spectacle which excites the admiration of almost every observer. Now, why this difference?—and hereby hangs a tale. In the observation which practice has forced upon our attention we have almost invariably found that climbing plants flower more abundantly when left in a comparatively neglected or untrained state, than when very sedulously attended and carefully trained; and the reason of this appears to be that these wildlings of the forest and the jungle do not like to be controlled too much by the hand of man; but, leave them to themselves, and allow them to grow almost unmolested, and they will flower as profusely as need be desired.

From this it will be perceived that our remedy for the blooming climbing plants is to allow them freedom of growth, to control them as little as possible, and thus by inducing natural vigour and habit, to promote the production of bloom. So far convinced are we of the correctness of this view of the cause of shy blooming in many plants, that we will venture to assert that if any person takes two plants of *Allamanda* *cathartica* and treats them precisely alike, except that one shall be carefully and regularly trained, while the other is left to itself, and if the untrained plant will not produce fifty per cent. more bloom than the trained one, why, we have been wofully deceived.

With these preliminary remarks we shall proceed to offer a few suggestions on the cultivation of some of the most remarkable stove climbers; and, to render our remarks the more intelligible to the amateur reader, we propose to treat of each plant separately, and we thus hope to render the pot cultivation of some of the finest climbing plants a little more profitable than, generally, it hitherto has been.

Stephanotis floribunda.—This lovely plant was introduced to our stoves some ten years ago, and first produced its flowers in the collection of Mrs. Lawrence, at Ealing Park, or rather, at that time, at Drayton Green, where its pure white wax-like flowers and delicate scent rendered it a very deserved favourite. It may readily be propagated by layering the branches or by cuttings; but as it strikes rather tardily, for private purposes, layers are preferable. In layering, all that is necessary is to give the branch a twist, so as to rupture the sap-vessels, or cut a notch close under a joint, bend the part into a pot, and cover with light sandy soil; sometimes these layers will produce roots and be fit to take off in a few weeks, while at other times they will be months in forming roots; but supposing that your method of propagation has progressed favourably, and that you have strong well-rooted plants, your best method of procedure will be to give the plants a liberal shift, about the first week in January, in a compost consisting of equal portions of good mellow turfy loam and turfy peat, with a good sprinkling of half decomposed leaf-mould, and sufficient sand and charcoal to keep the compost free and open; use the compost in a rough state, and do not make it too firm in the pots. After the plants are potted they should be plunged in a nice growing bottom-heat of from 75° to 80° and the atmospheric temperature should range from 60° to 75°.

Under such circumstances the plants will progress with great rapidity, more especially if the heat is produced by dung or other fermenting materials. About the middle of March they will require a second shift, and by the middle of May a third; still continue to use the same compost, and maintain a lively bottom and atmospheric temperature, of course taking the precaution to avoid burning by excess, either roots or branches. After February the plant may be watered liberally, once or twice a week, with manure water, prepared as directed at page 18; and if the walls of the pit and surface of the plunging material are occasionally sprinkled with the manure water the atmosphere will be improved thereby and the plants materially benefited. If these plants progress as they ought to do, they will, by the end of July, stock fifteen-inch pots, and cover cylindrical trellises four feet in height; after this time they must be gradually brought to a state of rest; and by placing them in a sunny, warm situation, close to the glass, every advantage must be taken to get the wood thoroughly ripened; if this can be accomplished early in the autumn, a few weeks under a south wall in the open air will do the plants no harm. During the winter keep the plants in a temperature rather under than over 50°, and give no more water than just what is sufficient to keep the plants from flagging. Plants thus treated are sure to bloom, providing the after treatment is suitable; if you keep the young shoots regularly tied down, three-fourths of the bloom buds will go blind; but if they are allowed to ramble and remain untrained until the flowers are of some size, no fear need be entertained of the plants progressing in the most satisfactory manner.

The time of introducing the plants into a growing temperature must be governed by circumstances, such as the suitableness of your forcing house, and the time the flowers are wanted. If you want a plant in bloom in April, it must be started in November, for May in December, and for June or July in February.

The proper method of management in the second or blooming season is this: Before introducing them to the forcing house remove the branches from the trellis, and having ascertained the length, reduce each about one-third; then with some soap-suds and a small brush wash every part of the branches and leaves, and likewise the trellis or trainer; and re-train the plants, taking care to keep the weakest shoots at the top of the trellis, and the strong ones at the bottom, so as to give one part a chance of gaining strength and to secure plenty of bloom at the lower part of the plant. This being done, remove as much of the surface soil as possible, and replace it with fresh compost, and then plunge the pot in a gentle bottom-heat of from 65° to 75°, and sprinkle twice or thrice a week with clean tepid water.

The *Stephanotis* produces its flowers on the young branches; and as the strength of the bloom is to a great extent governed by the vigour of the branches, it is advisable to force the plants very moderately at first, so as to get them to break as robustly as possible. After they get fairly started and have made shoots several inches long, the temperature both to the roots and branches must be gradually increased until the former ranges from 75° to 85°, and the atmospheric heat from 65° to 75°, or even 90° with sun heat. These plants delight in a brisk bottom-heat and an atmosphere loaded with moisture, and while they are growing freely they must be abundantly supplied with clean weak tepid manure-water; being naturally inhabitants of shady places, a little thin shade thrown over them during bright sunshine will be of benefit to them. In training let the shoots grow three or four feet long before you control them; then let the points remain loose until they grow several feet more before you train them again; and in this manner you will not only get plenty of bloom, but being able to distribute it, you may have plants regularly covered with flowers from the pot to the apex of the plant.

Stephanotis Thouarsii is said to be a very fine plant; but as we have not seen it in bloom, we cannot pronounce positively as to its merits, or whether it is in reality very distinct from *S. floribunda*. It requires the same treatment as the preceding, but does not bloom quite so freely; but whether this is the nature of the plant, or arises from improper treatment, we at present are not quite able to determine. These plants suffer much from the attacks of the red spider and thrips, and are also great favourites with the brown scale and mealy bug; but if they are properly cleaned at the time of introducing them to the forcing house and are copiously syringed and occasionally washed with a sponge during the growing season, no fear need be entertained of the insects making any serious inroad upon the health of the plants or beauty of their foliage.

From the preceding remarks, it will be seen that the main things to be attended to in the management of these plants, is to get an early and well-ripened growth, a long season of rest, to start the plants very gently in the growing season, and to avoid training the shoots until they are of considerable length.

Schubertia graveolens.—This plant was first brought into public notice in the nursery of Mr. Glendinning, at Chiswick, and was grown for some time under the name of *Physianthus auricomus*, by which designation it is known at the present time in some establishments. It is a plant of vigorous growth, producing a bunch of flowers at the axil of each leaf, like the *Stephanotis*, which it also resembles in the form of the flower. It is very powerfully scented, and the colour of the flower is a delicate creamy white.

The best method of management is to strike cuttings after the old plants have done flowering, which root readily in a brisk bottom-heat in any sandy soil. After they are rooted, pot them off singly, and keep them growing until you get the pots well filled with roots. From July until October is the proper season of flowering; but by proper treatment it may be got into bloom a month or six weeks sooner, and then it forms a very fine exhibition plant.

To attain this end, take a nice strong plant in January, and give it a liberal shift, using the same soil as for the *Stephanotis*, except that a small portion more loam may be added to it. Plunge the pot in a brisk bottom-heat of from 70° to 80°, and keep a lively atmospheric temperature. If the heat is produced by fermenting materials it will be the best, but, if it is not, the pit or house must be frequently sprinkled with manure-water, to improve the atmosphere of the place as much as possible. In such a situation the plant will grow with great vigour, and by March will be ready for a second shift; at this time do not spare pot-room, return the plant to the forcing-house, replunge it, keeping a bottom-heat of 80°, and the atmospheric temperature in the same proportion. Under such circumstances the plant will grow with great rapidity, so as by May to cover a large trellis. By this time the pot will be quite full of roots; and, therefore, to induce the plant to form flower-buds, it will be necessary to moderate its growth a little by placing it in an airy and unshaded part of the house, and by giving no more water than what is necessary to prevent its drooping. A fortnight or three weeks of this treatment will induce the formation of flower-buds, and these being perceptible, the old system of liberal treatment may be followed, as the blooming principle, once brought forth in this plant, it will continue to flower until the autumn; especially if it is abundantly supplied with manure-water, and kept in a growing temperature, Being a native of the interior of Brazil it requires plenty of heat and moisture during the growing season, but after the flowers begin to expand the temperature of a warm greenhouse will be found sufficient to carry the plant through the autumn months.

Unlike *Stephanotis* this plant flowers freely in the first season of its growth, and in very small pots; but like that plant, it is impatient of too much training. In the management of the old plants the best method is to cut them in very liberally after they have done blooming, and keep them in a comparatively dormant state until January, at which time the greater part of the old soil should be removed from the roots, and the plants be re-potted into smaller pots, using the same soil and pursuing the same treatment as with young plants. This plant, when planted out, makes a magnificent warm conservatory climber.

Allamanda cathartica.—From Guiana this plant was introduced in 1785, and has long and deservedly been a favourite stove climber in this country, flowering most profusely when planted out, but rarely producing many flowers when grown as a pot plant. This, we have fully satisfied ourselves, arises from the cause pointed out in the preliminary remarks to these suggestions; a fact which any person with a couple of plants may convince himself of in a very short time, by training one plant and leaving the other to Nature. The *Allamanda* may be propagated readily by cuttings of the young shoots taken off when they are about three inches long, and struck in sand under a bell-glass in a brisk moist heat. After the cuttings are rooted pot them off singly, using any light open soil, and endeavour to get the young plant well established in six-inch pots by the autumn. If the plants are rooted early in the spring, they may by good management be made to bloom in small pots in the autumn, and these make fine plants to grow into specimens in the following season.

Presuming you have strong established plants, take them about Christmas, and having pruned the side shoots to the best ripened buds, reduce the ball a little, so as to loosen the roots, and re-pot, using a compost consisting of two parts strong turfy loam, one part peat, and one part decayed cow-dung, to which add plenty of coarse sand and lumps of charcoal.

After potting place the plants in a forcing house, and, as they break rather tardily, plunge them in a lively bottom-heat; of course taking due care that it is not too hot. As the plants progress in growth remove them into larger pots, treating them liberally, by giving plenty of heat and moisture, and also supplying them duly with manure water. In this manner they will grow with great rapidity, after they have once started, and by the time they have made shoots three feet long will, if they have not been trained, be showing bloom. Do not, however, be in a hurry to train them, or the flowers will go blind, but let them grow wildly until the first flowers begin to expand. You may then twist and train them to whatever form you think proper; but the second set of shoots must be left to pursue their own course, or they in their turn will refuse to flower.

It must therefore be taken as a rule in training the *Allamanda*, to allow the flower-buds to be considerably advanced in size before you venture to repress the branches; and if this simple rule is observed, and the plants are liberally treated as to pot-room and attention, pot specimens may be had in full bloom from June until

December. When the flowers begin to fade, the plants should be gradually dried off, so as to bring them entirely into a state of rest for a month or two, before starting them into growth again in February. The *Allamanda* does not like much cold during its dormant season, therefore you must look to drought rather than a low temperature to keep it in a dormant state. This is one of the few plants which our common enemies in plant stoves, insects, do not touch, or at least but very rarely mealy bug and scale will have nothing to do with it, and the red spider and thrips must be hard driven for pasture when they wage war against it.

Allamanda grandiflora is comparatively a new plant, having been brought into notice three or four years back by Messrs. Veitch and Son, of Exeter, who were the importers of it. It is not nearly so strong in habit as *A. cathartica*, neither is it of such free growth, or so easily managed. Hitherto, it has been found to bloom rather indifferently when grown as a pot plant, and as the flowers resemble very closely those of *A. cathartica*, it is not likely to become a very general favourite unless subsequent experience, and experiments with older plants, should enable us to induce a more profuse habit of blooming.

CULTURE OF STENATHERA PINIFOLIA.

From the delicate foliage of this old and desirable greenhouse plant, it is indispensable that it is never crowded amongst other plants of a different habit; or the loss of foliage will be the certain consequence.

If in the summer season this plant is placed out of doors, be careful not to set it in an exposed situation, either where there is too direct sunshine or liability to the action of the wind. If convenient it is always advisable to keep this, and indeed the whole of Epacridaceous plants, under cover at all times.

In potting never allow the roots to become matted, but always pot when the roots have spread moderately through the soil; this is especially necessary if the plants are ever turned out of doors, for the sun would otherwise dry up the small fibrous roots, and the loss of the plants is almost certain.

The proper soil for the purpose of potting is three parts sandy heath mould, and one part sandy loam. Mix and break together, but do not make too fine, lay in the bottom of each pot a good handful of broken crocks for drainage, and mix a few through the soil, for without a good drainage it is impossible to keep the plant in a state of health.

Administer water as often as requisite, and be cautious never to allow the soil to become dry and baked, for the tender roots are incapable of enduring such a privation of moisture.

For propagation take off young cuttings in the autumn, plant them in pots of sand, cover with a glass, and set on a shelf in the propagating-house or other similar situation, and the following spring they will strike root freely.

A FEW REMARKS ON THE VARIOUS SPECIES OF MUSA.

In Mag. Bot. vol. 3, page 51, is a plate of *Musa Cavendishii*, and also a detailed account of several of the known species, as *M. Cavendishii*, *M. paradisiäca*, *M. sapientum*, *M. rosacea*, and *M. coccinea*. Their history and botanical differences were gone through and illustrated, and the methods of culture given; we are not about to repeat what has there been said, but purpose directing attention to a few points in their management, which ought not to be overlooked.

It may be objected by some that Musas are unworthy of much attention, because to grow them requires considerable extent of accommodation, and as ornamental objects they are coarse, and by no means showy; neither of these objections are so heavy as they at first sight appear. The first being only applicable to very small establishments, and the last only to those very few instances where plants which alone are remarkable for beauty in flowering are esteemed. If no advance as to style and dimensions had taken place in our glass erections within the last ten or fifteen years, *Musas* and other plants of similar habits would have continued to exist as mere botanical wonders, or curiosities; but progress has been made, and that so great and extensive, that now, in very many instances, sufficient space and suitable accommodation is afforded both for *Musas* and many others of our finest tropical fruits.

Musas when they flourish are amongst the most splendid objects in a tropical house. To induce them to thrive well the following particulars may be of some service:—all the species are very gross feeders, and soon exhaust the richest soil; therefore, however they may be grown, whether planted in a prepared border, or grown in large pots, or tubs, it is indispensable that the best and very richest earth should be used which it is possible to procure. Rich and well rotted manure is also a very important ingredient, but too much of it must not be added to the soil, otherwise the plant may receive injury whilst it is young, and its growth be, in consequence, retarded for some time. *Liquid manure*, not too strong, may be continually supplied during their progress of growth, with much advantage.

In the growing season strong heat is indispensable to render the developments as speedy and perfect as possible. The air, too, can scarcely be loaded with too much humidity at this time, and by often carefully syringing, so as not to break the tender leaves, the plants are kept clean and free from insects; watering at the roots is another very important point, this the plants require to be administered freely, but it must always be regulated by the situations and conditions of the various plants. If exposed to a strong heat and powerful light, or their roots are confined in tubs or pots, they can scarcely, in the time of growth, receive too much; but, where there is considerable space for the roots to grow, or where they are planted in a large and spacious bed of earth, the supply of water need not be so great.—Liquid manure may be regulated by the same rules.

Under favourable circumstances, two years will be sufficient to bring the *M. Cavendishii* and *M. Dacca, &c.*, into fruit; but the larger growing kinds require three years, generally speaking, to fruit.

During the course of growth several suckers will be furnished by each plant, these must be supplied with new soil, to assist their growth as much as possible. It remains to be added that *Musas* should be started into growth as early as *possible in Spring*, and induced, by every possible means, to perfect their developments for the season, very early; too much care cannot be exercised to accomplish this in proper time, and keep them in a quiescent state by withholding water, &c., when their growth has been matured. In starting them into growth it is also necessary to be equally careful, and proceed with the increase of heat and water gradually; plants kept growing very late in the season, or exposed to much moisture when they are at rest, invariably become injured, or lose their foliage, and very often become so unsightly as to render their remove necessary.

Musa Cavendishii is the best for general culture, as it can be grown and fruited wherever there is a space of soil eighteen inches square to be devoted to it in an ordinary stove; liquid manure being abundantly given. The fruit of this excellent species is too well known and esteemed to require further mention.

The above few remarks would probably suggest themselves to any person of experience, and therefore to them can be of little service; but there are many cultivators who have, hitherto, had little opportunity of growing these plants, to such our observations will be of use.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR FEBRUARY AND MARCH, &c.

ÆCHMEA DISCOLOR. A singularly attractive plant, from the rich coral-red of the panicle, the flowers being of the same bright vermilion colour, and the calyx tipped with black; also from the great length of time the plant continues in blossom, through the whole of the winter months. The unexpanded buds have a most striking resemblance to the well-known beads commonly called "crabs' eyes," which are the seeds of *Abrus precatoria*, only that they are much larger. The species is probably a native of Brazil.—*Bot. Mag.*, 4293.

ANIGOZANTHOS FULIGINOSA. This is one of the few new plants figured in the "Botanical Magazine," of which no living specimen yet exists in our gardens. It highly deserves cultivation, and is among the rarest of the genus yet found in Australia, and is thus noticed in conjunction with another species, *A. pulcherrima*, figured *Bot. Mag.*, 4180, in a letter from Mr. J. Drummond, published in the "London Journal of Botany," vol. iii., p. 263:—"By a ship now about to sail I send two fine species of *Anigozanthos*, collected by my son (since killed by the natives) in the vicinity of the Moore River. The dark flowering one (*A. fuliginosa*), of which but two specimens have ever been found in bloom, is a real *mourning flower*; the upper portions of its stem and lower portion of the corolla being covered as it were with black velvet; the corolla is deeply cleft, expands about two inches, and is of a pale straw colour. The species is not allied to any other yet discovered in the Swan River settlement."—*Bot. Mag.*, 4291.

ANGRÆCUM FUNALE. One of the rarest and least known of the West India Orchids, which though referred by Lindley, in the "Genera et Species Orchid," to *Œceoclades*, that excellent botanist has since acknowledged it to be a true species of *Angræcum*. *A. funale* and *A. filiforme* are the only species yet detected in the new world, and both are aphyllous, the rest being all natives of tropical Eastern Africa and adjacent isles. *A. funale* grows on the trunks of trees in the mountains of Jamaica. Attached to a block of wood, and freely supplied with moisture, it produced its green and white, highly fragrant blossoms, in the winter of 1846.—*Bot. Mag.*, 4295.

Aquilegia jucunda. This plant Dr. Fischer says stands intermediate between *A. glandulosa* and *A. alpina*. The sepals are ovate, tapering to the point, and deep blue; the petals are roundish ovate, whitish, and touching each other by their whole length. It is found in the mountains of Siberia. In gardens it is a fine hardy perennial, growing about a foot high, when planted in a compost of sandy loam and leaf mould. It is well suited for Rock-work, where it can be kept free from damp when in a state of repose, but freely supplied with moisture during the growing season, otherwise the plants dwindle away and never flower. It is increased by seeds and division. —*Bot. Reg.*, 19.

Brunsfelsia nitida Jamaicensis. This is the variety *Jamaicensis* of *B. nitida*, of Mr. Bentham, being what corresponds with the specimens sent by Mr. Purdie from Jamaica. It is a handsome plant, with large yellow flowers, and blossoming during the summer months copiously in a cool stove, and easily increased by cuttings.—*Bot. Mag.*, 4287.

Columnea aureo-nitens. In the Royal Gardens at Kew this plant flourishes in a moist stove, producing its blossoms in autumn and early spring. The flowers and nearly the whole plant, but especially the younger portions, are densely covered with a rich gold-coloured clothing of silky hairs.—*Bot. Mag.*, 4294.

Cœlogyne speciosa. This species was sent from Java to Messrs. Veitch of Exeter. The pale tawny sepals and petals, and pitch-brown lip of this plant detract from its beauty, notwithstanding that they are relieved by a broad white column, and a pure white termination to the lip, and that its flowers are nearly four inches diameter when fully expanded. They have, however, a very singular appearance, and if they are produced in greater numbers, will be attractive so long as the white remains unchanged.—*Bot. Reg.*, 23.

Echinocactus Williamsii. A neatly-formed species, which has a pretty appearance when its starry blossoms are expanded. The flowers are pale rose-coloured, and are produced in the summer months. *Bot. Mag.*, 4296.

Gongora bufonia leucochila. A pale variety of *G. bufonia*, with sepals pale purple, and lip white.—*Bot. Reg.*, 17.

Henfreya scandens. Under the name of Dipteracanthus scandens this plant was exhibited by Mr. Glendinning of Turnham Green, at a meeting of the Horticultural Society, a short time ago, when it was awarded a Knightian medal. It is an Acanthaceous plant. *Bot. Reg.*, *descrip.* fol. 23.

Pancratium humile. A diminutive yellow flowering species, the humblest of Pancratiform plants.—*Bot. Reg.*, 22.

Odontoglossum Warneri purpuratum. The original of this dwarf species is no doubt a native of some part of the tropical regions of America. The present variety was obtained from Mexico by Messrs. Loddiges. A healthy mass of it is very handsome, the yellow of the lip and the purple stripes of the sepals and petals being deep and clear. *Bot. Reg.*, 20.

Pharbitis cathartica. A beautiful Convolvulaceous plant, the flowers of which are particularly vivid, varying from deep reddish-purple to rich violet-blue. The 'Flore Medicale des Antilles' states that M. Bauduit, a rich proprietor of St. Domingo, discovered in this milky plant a resinous juice, which coagulates and proves to be profusely purgative. He formed of it a much approved syrup, which, in the French colonies, bears his name. *Bot. Mag.*, 4289.

Siphocampylos microstoma. Among many fine species of Siphocampylos detected by Mr. Purdie in New Grenada, few, if any, can vie with this in the size of the flowers and richness of their colour. It seems also to produce its blossoms early and freely, and is a great acquisition to the stove during autumn and winter, and in summer in the greenhouse. The flowers are a very brilliant scarlet. *Bot. Mag.*, 4286.

PLANTS NEW OR INTERESTING, IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES AND GARDENS.

AERIDES VIRENS. This very handsome and lovely species is now exhibiting its delicate wax-like flowers, from two racemes, each about a foot long. The flowers are like *A. odoratum* in form and fragrance, but much handsomer in appearance, from the delicate lilac tint infused through the flower, a deep spot of violet placed at the tips of the petals, while the labellum is covered with smaller spots of a rosy colour; its habit is less robust than *A. odoratum*, foliage being longer and narrower. The specimen is flowering at Messrs. Loddiges, Hackney.

BLETIA SPE. A remarkably pretty and interesting plant, which evidently belongs to this race, is now in flower in the Royal Gardens, Kew. It differs from the rest of the species by its flower-stems being branched, so that, instead of a cluster of flowers at the top of the stem, you have a panicle. The stem is so light as to be scarcely able to support the weight of flowers, which are small, of a delicate rose colour, the lip tipped with deep crimson. We found some of the stems had as many as thirty-six flowers upon them. The bulb small and round; leaves long and narrow, near eighteen inches long, and only an inch and a half wide. The profusion of flower and graceful character of its habit will make it an object of considerable attraction. The specimen has been in flower several weeks.

CAMELLIA RETICULATA. When a fine, though old plant, flowers in a superior manner, we hope we may be held excused from again bringing it before the notice of our readers. The specimen we wish to notice is in flower in the conservatory of Sir John Broughton, Kingston; and, whether from the largeness and beautiful growth, or the number, size, and deep rose-colour of the flower (approaching crimson), it stands unrivalled as a specimen. The plant is about twenty years old, set in the border, has a short thick stem for about a foot, when it separates into three branches or trunks; these again throwing laterals out close to the ground, extend to thirteen feet wide, and the loftiest branch would have been fifteen feet high, but that two feet were taken off last year to keep it from straggling. We were informed by the gardener (Mr. Redding, jun.), that he only allows one flower to a shoot, and had plucked nineteen hundred and fifty buds, leaving seventeen hundred and fifty flowers upon the plant, each flower averaging between seven and eight inches in diameter. Our readers may form some idea of its splendour from the immense number of flowers. Sir J. B. has always been noted for his choice collection of these handsome flowers, and any one who has been favoured with a sight of them must express their satisfaction at the truth of such report, whether from the luxuriance of flower or healthy condition of the plants.

DENDROBIUM ANOSMUM. This very handsome species has lately been showing its charming flowers in the nursery of Messrs. Loddiges, Hackney. It approaches nearest to *D. macranthum* in habit, but differing widely in its flower, being smaller, less straggling, more compact in form, and set closer in pairs on the bulb without foliage. The flower is of a delicate lilac colour, relieved by a deep crimson purple, covering the labellum, leaving only a narrow margin of pure white. The flower differs again, from *D. macranthum*, being devoid of that strong odour of rhubarb, which renders that species so obnoxious.

EPACRIS, *var.* At the nursery of Messrs. Fairbairn, Clapham Rise, we saw some very excellent hybrid varieties, from *E. impressa* and *E. campanulata*, varying in tint from the deepest crimson to pure white. One variety, pale pink, has black anthers, which give it quite a novel appearance; another variety expands its flowers pure white, and as it goes off becomes a rich, lively pink; seeing the plant about mid-time of its blooming, it has quite a variegated appearance. The habits of the whole seem to be good, and the flowers have not only colour but size to recommend them. They flower in the greatest profusion, and for a much longer period than the species.

JUSTITIA SPE. A plant said to belong to this genus is now in flower in the Royal Gardens, Kew. The foliage is much like the *Justitia*, though larger than most of the species, and of a very bright, glossy, green colour. The stem, a dark purple, is two feet long, bearing for about six inches at the top a profusion of small scarlet flowers, set in whorls of ten or twelve thickly together. The flower has a small, thin tube, an inch and a half long, spreading at the point into five divisions about half an inch in diameter. The plant, including the flower-stem, is from three to four feet high.

Melanthium triquetrum. A pretty native of North America, and now flowering profusely in the Royal Gardens at Kew; the plant has rush-like foliage, eighteen inches long, bursting about midway, to allow the flowers to exhibit themselves. The flowers are a delicate white, having a slight tint of pink upon them, with a deep purple spot at the base of each petal; they are about an inch and a half in diameter. The spike is three or four inches long, holding eight or ten flowers. When a mass is seen in good perfection, it has a very lovely appearance.

Salvia spe. Two new species (one scarlet, the other blue), have shown their inflorescence in one of the stoves in the Royal Gardens, Kew. The scarlet one, though brighter, is very nearly allied to *S. splendens* (without the large bracts), both in form of flower and habit of the plant. The blue one has much the habit of *S. patens*, while the flower is much smaller, though of a very brilliant colour, which we fear will not be a sufficient attraction for cultivation, when contrasted with *S. patens*. The flower is neat, and apparently produced in abundance.

OPERATIONS FOR MAY.

In this month vegetable nature is generally in full and vigorous growth; unabated attention is daily required, especially in the stove, to afford every assistance in rendering the various developments as healthy and perfect as possible. This, if the plants are placed in proper soils and situations, may now be chiefly effected by strong heat, great humidity, partial shade, watering, syringing, air judiciously admitted, keeping down insects, and freeing the leaves from accumulations of dirt. Much of the *first* can be accomplished in fine weather by the natural *heat* of the season during the day time, but fires will always be requisite at night. The thermometer may be allowed to range, generally speaking, from 80 to 95 degrees, (according to the weather), by day, with abundance of moisture, and not lower than 70 degrees by night. *Humidity* may be obtained by tanks, throwing water about the floor, and other parts of the house, and by syringing. *Shading* is only generally necessary on very bright days, or with some particular plants which will not bear the sunshine, as *Brownea, &c.*, unless there is a deficiency of moisture in the air; then every plant will be more or less affected by the strong light and heat. *Air*, though very beneficial, should be given with judgment; high temperature must be obtained, nor can humidity be, in any respect, dispensed with; the admission of air, therefore, must be regulated by these two requirements, which a judicious cultivator will easily understand.—Any dirt on the leaves not removable by syringing, must be washed off with a sponge.

These are some plants whose state of growth might merit especial notice in this place, viz., the various species of *Hibiscus*; these are all now in vigorous growth, and with care will be fine spectacles by and bye. They are exceedingly liable to the attacks of Aphis. Syringe often and keep them as clean as possible. *Passifloras* of various kinds will now be expanding their blossoms; where it is desirable to have a good show of fruit hanging upon them in the autumn, fertilise with the pollen of *P. edulis* and *P. cærulea*, no other kinds appear to answer so well; by this means *P. quadrangularis*, *P. alata*, *P. Buonapartia*, &c., will be perfect pictures during the autumn. The various kinds of *Achimenes* must now have particular attention if a good bloom is to be had. *Barnadasia rosea* will be better now placed in the greenhouse.

In the Orchideæ house the same routine of treatment should be proceeded with as for last month, that is, heat, moisture, and shade.

In the Greenhouse Chinese Azaleas should be potted as they go out of flower, and cuttings put in as soon as the young wood is ready. *Epacrises*, and other plants of similar habits, may be now increased by cuttings. The *Chirita Zeylanica*, now coming into flower, must be well shaded. Where it is desirable to have a quantity of plants flowering late in the autumn, some *Pelargoniums*, *Calceolarias*, &c., may be set apart for the purpose, and if the flowering buds be carefully picked off as they appear, and the plants be kept in a fine vigorous growth, the greenhouse will be rendered very gay at a time when flowers in the open air begin to be scarce. This is also the very best time to put in cuttings of *Pelargoniums*, *Proteas*, *Leucadendrons*, *Passifloras*, *Fuchsias*, &c. Watering is now of considerable importance, and should be administered liberally.

In the open air this is a busy month, being the proper time for filling up the beds of the flower garden, for a summer and autumn display of flowers. This is done chiefly with *Verbenas, Salvias, Petunias, Anagallis, Pelargoniums, Fuchsias, Alonsoas,* &c., in preference to annuals, which soon cease flowering, and become shabby. It is better to sow annuals either in the borders or in rows round some of the beds in the flower garden, near the edge. In planting do not lose sight of harmony in colours, nor of the rules generally observed to obtain a good effect. The centre bed should always be planted with some species growing strong, and very conspicuous when in flower, or else it should consist of a basket of flowers, a fountain, or something else which will form a conspicuous centre object; every surrounding bed should have another similar bed on the opposite side of the group, planted so as to exactly correspond both in habit and colour. If the beds are cut out on the grass, very rich and lively colours are requisite to give a warm and cheerful appearance; but if the beds are made on gravel, more pale-coloured flowers may be introduced.

Keeping down insects is a very important part of successful cultivation, for without this no plant can be kept long in vigorous growth. Those which may be mentioned as very prevalent at this season, are the common Brown Scale (*Coccus hesperidum*); the small White Scale (*Aspidiotus Nerii*); the Brown Limpet Scale (*Coocus patellæformis*); the Black Turtle Scale (*Coccus testud*); the small Brown Scale (*Aspidiotus Proteus*); the Mealy Bug, (*Trechocorys Curt.* [*Coocus*] *adonidum*); the Olive Green Aphis (*Aphis cassiæ*); and Red Spider (*Acarus telarius*).—The Brown Scale (*Coccus hesperidum*) is so well and universally known, that nothing need be said in point of description. The small White Scale (*Aspidiotus Nerii*) is a most destructive little creature, and exceedingly difficult to extirpate, for they secrete themselves in niches in the bark, on the under sides of leaves, folded buds, and in other situations where the application of remedies can with difficulty reach them; they attack almost, indiscriminately, all plants with hard wood and shining leaves, but avoid those where the wood and leaves are very downy. The economy of these insects resemble in many respects that of the *C. hesperidum*, but, both male and female are much smaller; the latter is more prolific, and when fixed, has less the appearance of a living creature. The colour is a pale yellowish white, inclining in the centre to a brownish buff; the form is nearly round, and the whole very thin and flat; but if the shield be carefully raised, and examined with a miscroscope, it will be found to cover an almost incredible number of very minute eggs. In the course of some days these eggs are hatched, and in a week or so afterwards, the young quit the shelter of the shield, proceeding from the lower extremity, and thus leave it unmutilated, and nearly as entire to appearance as ever. The young are at this time, not only remarkably small but somewhat active, and with a good glass may be seen moving about from place to place, exhibiting nothing of that torpor which after they become visible to the naked eye, is their unvarying characteristic. In a few days after their separation, the females select a situation whereon to fix themselves for life; they there commence sucking up the juices, assume the form in which we usually see them, and lay their eggs. After having performed this great business of their existence, they die, and their skins furnish habitations for their numerous progeny. The males are much smaller than the females, and very dissimilar in appearance, being in reality little flies of a slender make and yellowish brown colour; they have antennæ and two black eyes, also two bristles on the abdomen, very much like those of Aphis; they have six legs and two long semi-transparent wings, more than twice the length of the animal's body. They are seldom on the wing, but may often be seen slowly crawling over the branches or leaves of infested plants; and from appearance their life is extremely short, probably not exceeding a few days.

The Brown Limpet Scale (*Coccus patellæformis*) bears a great resemblance to the *C. hesperidum*, but is intermediate in size betwixt the latter, and the large winter scale of the Mealy Bug (*Trichocorys adonidum*) being larger than *G. hesperidum*, and smaller than *T. adonidum*. This especially infects *Cinnamomum cassia, C. verum*, and other aromatic plants, and from the rapidity of its increase, is very difficult to master. The colour of the shield is dark brown when the insect is matured, and of an oval shape; but when young, and seated on the tender leaves of plants, they are pale buff.

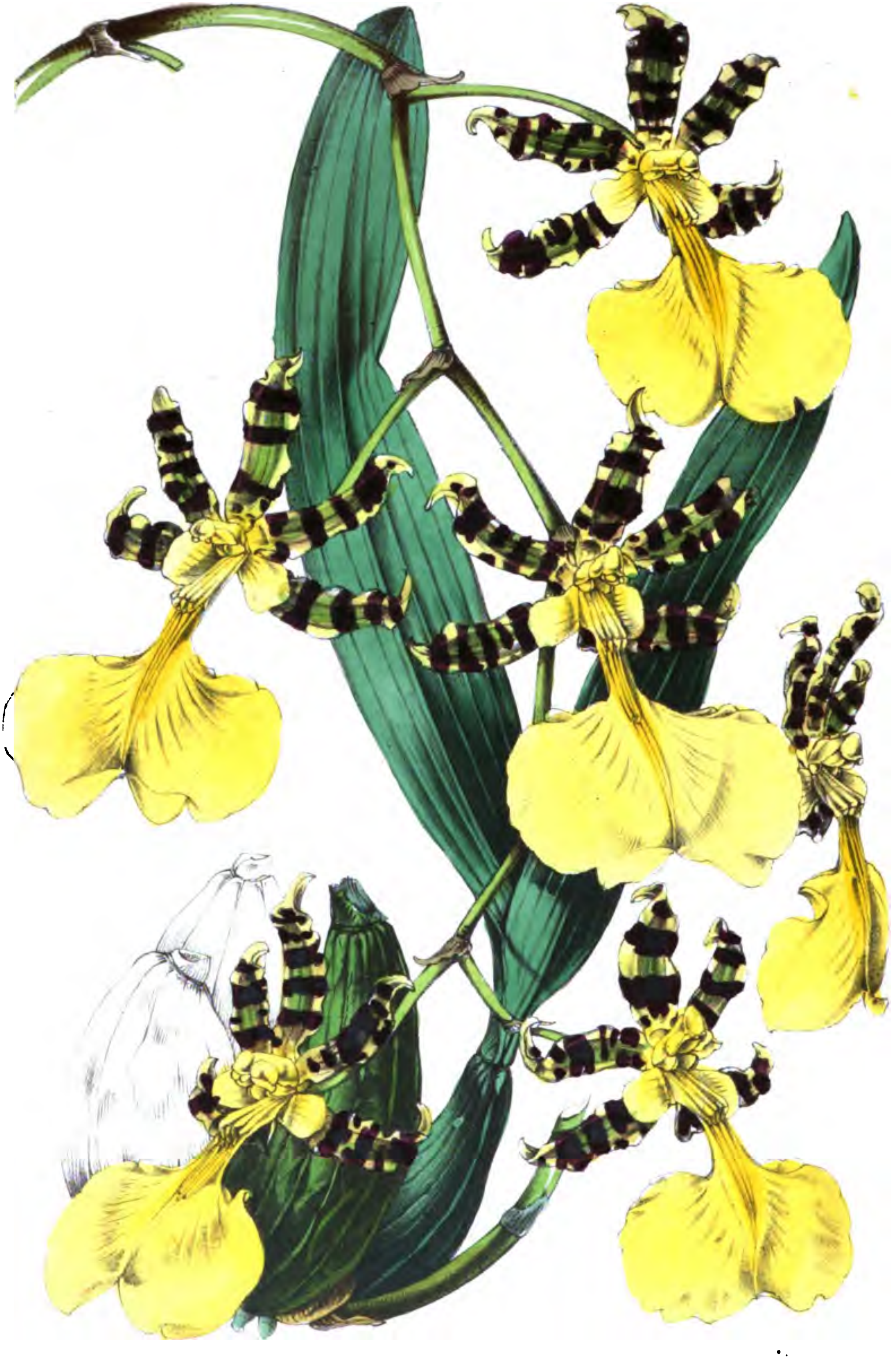
The Black Turtle Scale (*Coccus testudo*) is smaller than the last and not so flat. It infests the leaves and stems of most hard-wooded stove plants, but does not refuse those subjected to the temperature of the greenhouse. This species is found seated both in the upper and under side of the leaves, but prefer the latter, and usually fix themselves along the midribs. In shape they are oval, somewhat cylindrical, covered with tufts of short downiness, not very conspicuous, but withal glossy and of a dark-brown colour. The young are flat, of a pale orange colour and semi-transparent, and are also active, like those of the Small White Scale, (*Aspidiotus Nerii*).

The Small Brown Scale (*Aspidiotus Proteus*). A very minute species of Brown Scale, of an oval form, and very prevalent in hothouses.

The Mealy Bug (*Trichocorys* [*Coccus*] *adonidum*). This species is larger than any of the previously mentioned kinds, when full grown it is more than twice the size of *C. hesperidum*, and is an universal depredator; for although it prefers plants with hard wood and shining leaves, yet it will attack those with every description of habit. The body of this kind when divested of its woolly appendages, is of a dull crimson colour, not much unlike the cochineal, (*Coccus cacti*,) but very inferior in brilliancy; it is marked across with several lines, which distinguish the number of segments; and the whole is thickly covered with a short white down not much unlike that of the American Blight, (*Eriosoma mali*,) only much shorter. It is not so sluggish as the previously mentioned species of scale, but may often when grown to a large size be seen crawling from one situation on the plant to another. In the autumn the female having grown to her full size, selects a situation where she may pass unmolested through the winter, and deposit her numerous eggs. This is always on the stems or branches of the infested plants, and never on the leaves; in this situation, she forms a large, deep brown, oval shield, glossy, and usually as nearly the colour of the stem on which it is seated as to remain easily unnoticed by any except a practised eye. Beneath this shield her eggs are deposited, and remain securely covered, and the young also remain there for some time after they are hatched. In the following February or March, according to the temperature kept in the house, the young having become much increased in size and the parent being dead, the shield is partially raised, and the young are observed enveloped in a thick cottony covering; and in the course of a week or two afterwards, they quit their protection of the shield, separate from each other, and establish themselves upon the different plants in the immediate neighbourhood.

The Olive-coloured Aphis (*Aphis Cassiæ*). As general depredators, perhaps no insects are more injurious than Aphides, nearly every species of plant, whether exotic or native, being in a greater or less degree infested with them at one time or other; and it has been thought by many persons that every genus of plants has its peculiar species of *Aphis*. The present subject feeds upon all the tender kinds of *Cassia*, *Mimosa*, &c., chiefly selecting such as have small and tender foliage, as *Mimosa*, *Tamarindus*, *Poinciana*, &c. Whether this species of aphis is a native of India. and was originally introduced to these countries along with tropical plants is unknown, but it is evidently unable to bear much cold, and thrives with the greatest rapidity in a hot dry atmosphere, and is now so common an inhabitant of our stoves that few either large or small collections are without them. The males have four long transparent wings, but the females are wingless. The colour is a dark olive green whilst young, but as they advance in age they become nearly black. They increase rapidly, and soon cause the leaflets to become sickly and die.

Red Spider (*Acarus telarius*). Nearly all kinds of plants, and even the food we eat, are, at one time or other, infested with some species of mite, and so are nearly all animals with which we are acquainted. The *A. telarius* is a common pest to our plants and appears to equally multiply at all seasons of the year, if the temperature and other circumstances be suitable. The females lay their eggs generally on the backs of the leaves, because there they are sheltered from intense light. The eggs are very minute, of a whitish colour, and not collected in masses, but scattered thickly all over the leaves, as may be seen with a good microscope. In eight or nine days the eggs are hatched, and the young begin to move about upon the leaves. They are at first remarkably small and colourless, but of the same form as the parents. As they advance in growth they become more red; when half-grown they are very active, and when arrived at their full size, are dark brown and slightly hairy. From the time they issue from the egg until they are full grown, they cast their skins several times, becoming each time something darker in colour, but in other respects changing little except in size. They construct for themselves close silken webs, by which they travel from one leaf to another; these webs also being closely woven on the under sides of the leaves, shelter the young from the effects of moisture, which would soon prove fatal.



S Holden del & Lith

Oncidium Barkeri

ONCÍDIUM BARKÈRI.

(Mr. Barker's Oncidium.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

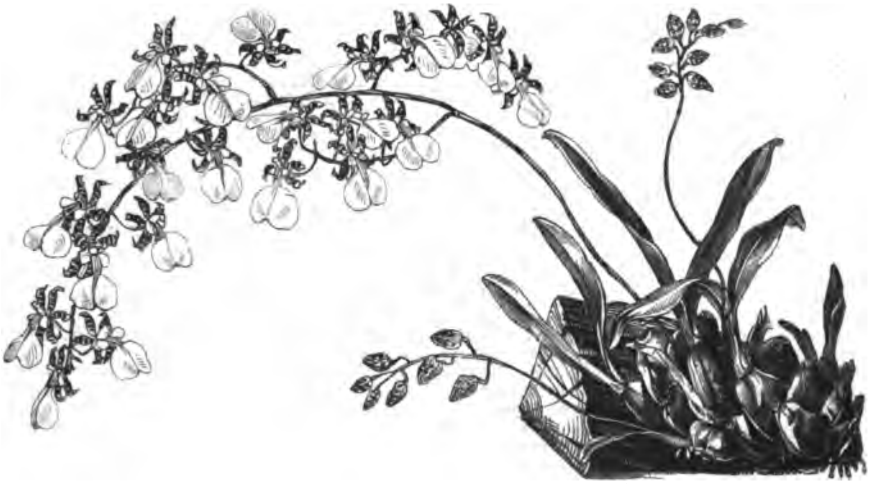
Generic Character.—*Perianth* showy. *Sepals* often undulated, lateral ones sometimes connate with the lower part of the labellum. *Petals* similar. *Labellum* largest, spurless, continuous with the column, variously lobed, tubercled or crested at the base. *Column* free, semi-cylindrical, winged at the top on both sides. *Anthers* usually two-celled; rostellum sometimes shortened, sometimes elongated and beaked. *Pollen-masses* two, furrowed behind; caudicula plain; gland oblong.

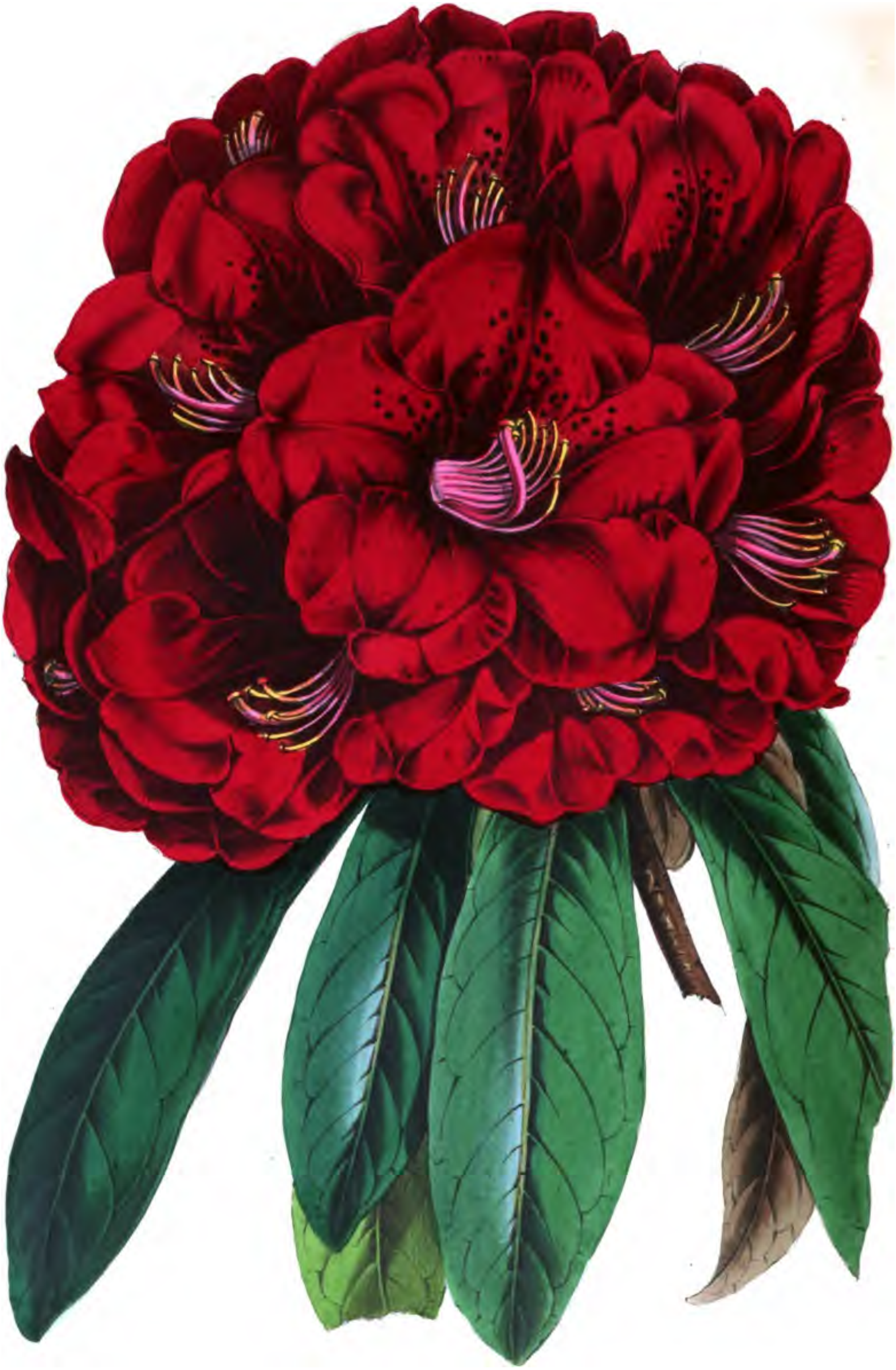
Specific Character.—*Pseudo-bulbs* oval, compressed, blunt-edged, with a furrow or two passing down each side. *Leaves* small for the size of the plant, two to each pseudo-bulb, of an oblong-lanceolate form, with a long sheathing striated footstalk, which is distinctly articulated in the middle. *Flowers* disposed in a simple curved raceme, and consist of from five to seven in number. *Sepals* and *petals* alike in form and colour, linear-lanceolate, wavy, spreading, or turned back, the lateral very slightly adhering at the base; they are covered with deep rich brown spots and bands on a pale cinnamon-coloured ground. *Lip* pure yellow, without spotting, much paler on the under side, and longer than the sepals; middle lobe large, broader than long, slightly pointed at the top, which curves inwards in the manner usual in this genus; it is distinctly stalked: lateral lobes flat, oblong, truncate, with rounded angles, one-third the breadth of the middle lobe. *Crest* consists of an anterior tubercle slightly three-lobed and hollowed out in front, and of a depressed, two-lobed elevation immediately behind it. *Column* unusually short, pale-yellow, with a pair of rounded oblong wings.—*Lindley, in Sert. Orchid.*, 48.

This fine species of Oncidium was imported from Mexico some years ago, by Mr. Barker, in whose collection it flowered in 1841, when it received its present name by Dr. Lindley, who published a notice of it in the Botanical Register of that year, No. 174 of the miscellaneous matter. It has, since that period, flowered in several other places, first with Mrs. Lawrence, at Ealing Park; also in November last with J. W. Schroder, Esq., Stratford Green, Essex, where our drawing was made; and latterly, during February and March of the present year, at Chatsworth.

Like the other species of Oncidium, this requires a hot and very damp situation, and also in its growing state a liberal supply of water; but when it has perfected its summer's growth, it should be gradually dried off, and have a rest for about three months in a cool and dry temperature. It may either be placed in a basket of moss and rotten wood, fastened to a block, or grown in pots of turfy peat; but it is necessary the drainage be particularly good.

The generic name is derived from *ogkos* a tumour, in allusion to the base of the lip.





S. Holden del. & lith.

Rhododendrum Paxtoni.

RHODODÉNDRON ARBÒREUM PAXTÒNI.

(Mr. Paxton's Tree Rhododendron.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
ERICACEÆ.

Generic Character.—*Calyx* five-parted. *Corolla* somewhat funnel-shaped or campannulate, rarely rotate or five-parted, limb five-cleft, somewhat bilabiate; upper lip broadest and usually spotted. *Stamens* five to ten, usually exserted, declinate; anthers opening by two terminal pores. *Capsule* five-celled and five-valved; rarely ten-celled and ten-valved, as in *R. arboreum*, with a septicidal dehiscence at the apex. *Placentas* simple, angular. *Seeds* compressed, scobiform, winged.—*Don's Syst.*, see *Mag. Bot.*, 1—101.

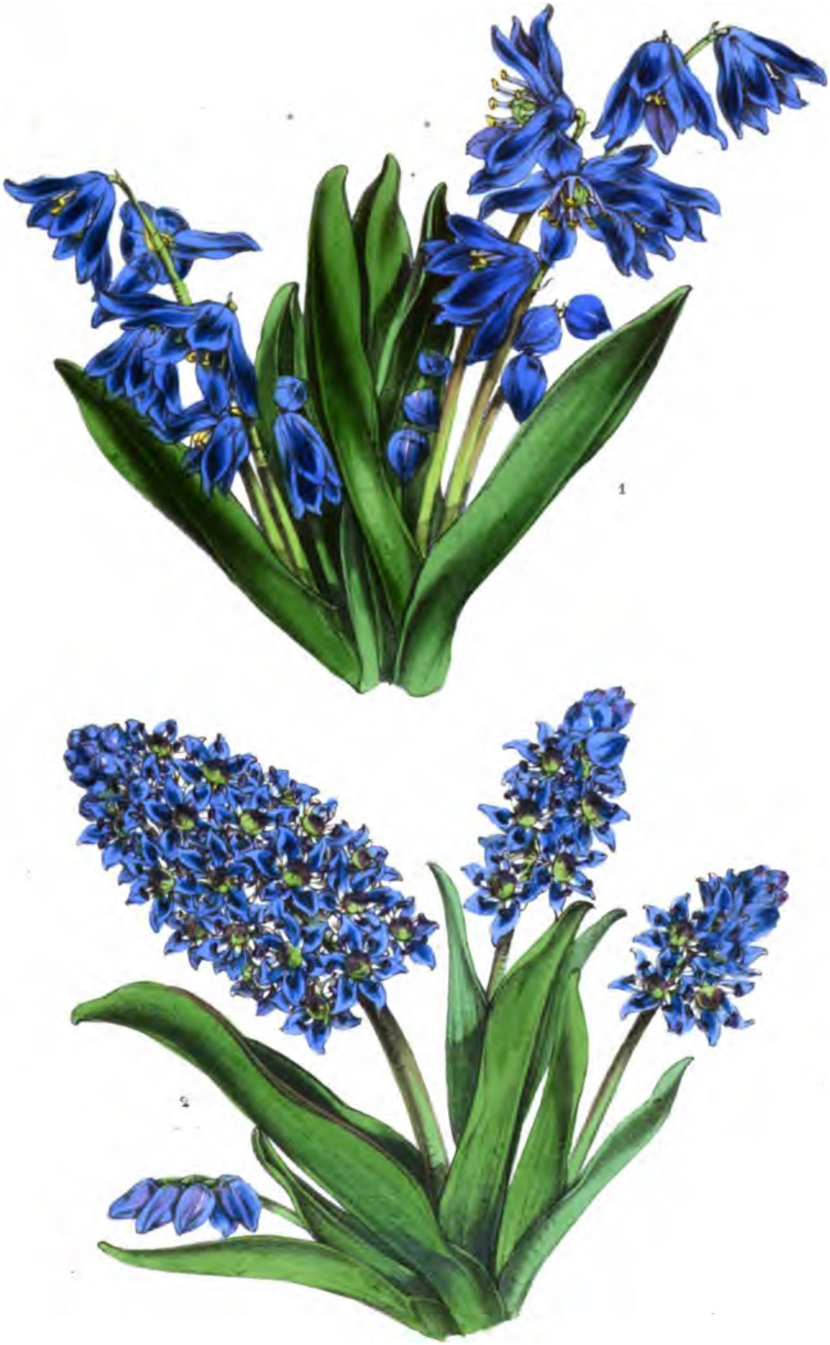
Specific Character.—Plant an evergreen tree. *Leaves* oval-lanceolate, stalked, acute, 4—6 inches long, 1½ inch broad; above smooth and dull, with sunken veins, beneath silvery, with smooth, prominent, naked veins. *Flowers* terminal, clustered in a short raceme, proceeding from a bud covered outside with oblong, imbricated brown scales, which gradually become more acute, membranous, and silky as they approach the flowers, among which they are finally mixed, as in *Enkianthus*, in the form of bracts, which are placed singly under each flower, and are spatulate-lanceolate, bowed, cymbiform, white, silky, the length of flowers, and falling off with the flowers. *Pedicels* short, wrinkled, scurfy. *Calyx* short, flattish, five-toothed, pubescent. *Corolla* dark scarlet, fleshy, campanulate at the base, with five prominences, five-lobed, 1½ inch long, with rounded, wavy, emarginate lobes, of which the lowest are largest; the throat covered with dark purple spots. *Stamens* ten, hypogynous, the length of corolla; filaments white, fleshy, filiform. *Anthers* brown, oblong, apparently inverted, and therefore opening by two pores at the end, not calcarate. *Pollen* pale yellow, globose, clustered in threes.—*Lindley, in Bot. Reg.*, 890.

Paxtoni.—*Leaves* three to four inches long, tomentose, somewhat obtuse, dull green above, ferruginous beneath. *Flowers* not seated immediately above a whorl of large leaves, as those of *R. arboreum*. *Corolla* crimson, very fleshy, campanulate, three inches long, and the same in diameter when expanded; and the throat very indistinctly spotted.

This very magnificent variety of *R. arboreum* is a native of the East Indies, where it was discovered in 1837, by Mr. John Gibson, His Grace the Duke of Devonshire's collector. It grew in elevated situations on the Khoseea Hills, forming a spreading tree of considerable beauty. It produced its splendid flowers for the first time in the greenhouse at Chatsworth, in the spring of 1844, being then a very small plant. This spring it has again flowered, when our drawing was made.

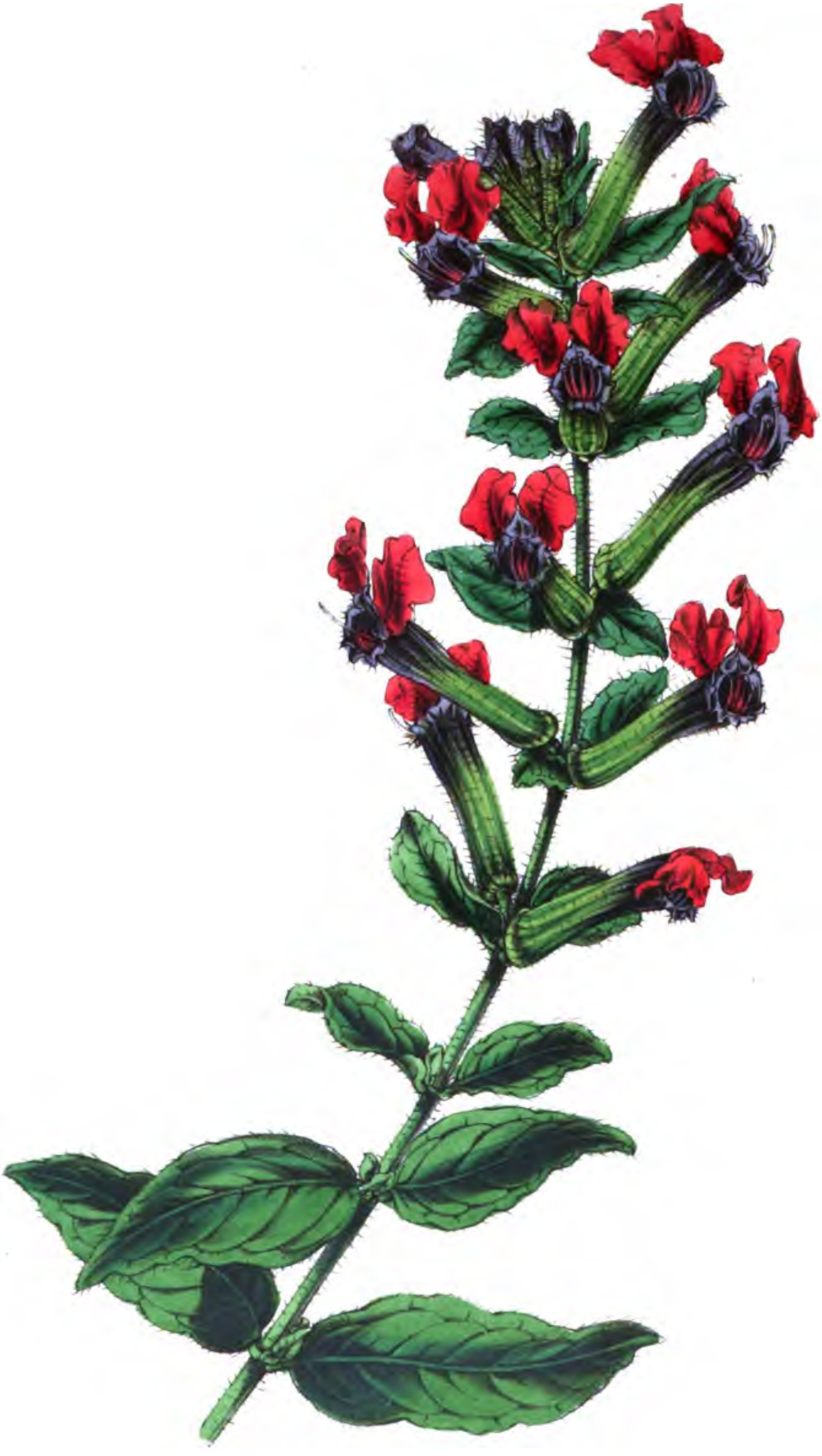
It succeeds best when potted in turfy heath-mould, with good drainage, and is easily propagated by layers or grafting on the stock of *R. ponticum*. It requires the shelter of the greenhouse, and in every other respect exactly the treatment of *R. arboreum*.

The generic name is derived from *rhodon* a rose, and *dendron* a tree; *arboreum* describes its tree-like habit of growth, and the name of this variety is given by Mr. Gibson, the discoverer.



G. Holden del. & Lith.

1. Scilla sibirica. 2. Scilla bifolia.



S. Holden. del & Lith

Cuphea miniata.

CÙPHEA MINIÀTA.

(Vermilion-flowered Cuphea.)

Class.
DODECANDRIA.

Order.
MONOGYNIA.

Natural Order.
LYTHRÀCEÆ.

Generic Character.—*Calyx* tubular, gibbose at the base on the upper side; limb wide, twelve toothed, with six of the teeth erect, and the other six small, or nearly obsolete, rising from the sinuses of the inner teeth. *Petals* six or seven, unequal. *Stamens* eleven to fourteen, rarely six or seven, unequal, inserted in the throat of the calyx. *Gland* under the ovarium thick. *Style* filiform. *Stigma* simple, or rather bifid. *Capsule* membranous, covered by the calyx, one or two-celled, at length cleft by the deplexed placenta as well as the calyx. *Seeds* nearly orbicular, compressed, wingless.

Specific Character.—*Plant* perennial. *Stems* green, erect, herbaceous, growing about two feet high, slender, leafy. *Leaves* opposite, ovate, acuminate, entirely covered with white bristly hairs. *Petioles* very short. *Flower spike* terminal, leafy; *Flowers* solitary, one springing from the axil of each leaf. *Pedicels* very short. *Calyx* persistent, long, cylindrical, tubular, gibbose at the base, broader towards the mouth, oblique; lower part bright yellow green, upper part rich purple. *Petals* two, situated at the upper side of the mouth of the calyx, rounded, intensely brilliant vermilion. *Stamens* enveloped in a purple woolly substance.—*Don.*

This brilliant flowering stove perennial was introduced to the collection of Messrs. Rollisson, of Tooting, from the Continent; but its native country, and by whom originally introduced, we are sorry to add is unknown: it is, however, most likely a native of some part of South America.

It is a plant of very fine growth and easy culture, requiring only to be potted in a mixture of equal parts of light loam, sand, and heath mould, and cuttings root freely in the same kind of soil.

LIQUID MANURES CHEMICALLY APPLIED.

THESE applications of enrichment have become so very fashionable of late, and are so highly extolled, that it is scarcely possible to take up a calendar of weekly operations where there are not directions for using such and such compounds. The subject is really of serious importance, and merits the interference of the philosophic chemist, to whom it is quite evident that the practice recommended is empirical, and in no degree founded upon science.

Let it not be understood that fluid manure is condemned. "To let well alone," and to persist in a line of conduct which, "as the rûle," is proved to be beneficial, is both justifiable and wise; the recommendation is yet so general, so indefinite, and so frequently guarded by expressions of caution, that something more precise is required of those who profess to look into causes.

Were either the theory or practice confined to the field, or even the kitchen garden, we should be unwilling to allude to it, in a work which is primarily devoted to floriculture and botany; but we hear and read of the great utility of liquid manures when cautiously applied to Azaleas, Camellias, and members of the herbaceous tenants of the greenhouse, the plant-house, the stove, and to the whole tribe of Geraniums and succulents. But then the question, What is liquid manure? occurs. Some tell us authoritatively, that one of the best forms combines a little sheep-dung digested in a volume of water, a portion of coal-soot, and a sprinkling of quick-lime, the whole to be intimately stirred and blended together, and suffered to subside till the floating liquid becomes entirely clear. Another gardener with whom the writer had once an interview, observed that he found great benefit from the liquor of "Potter's guano;" but by far the greater number of practical gardeners give the preference to the dark brown drainage from farm-yard manure heaps, more or less diluted. Not many years since, a veteran in the art wrote us that the soft water which percolated through a body of grass turf, (as, for instance, a sloping meadow which drained itself into a clean ditch or rill,) contained all the nutritive matters in solution which any fruit-bearing or ornamental plant could require. The last suggestion is the most wise, and evidently is grounded in wisdom, as we shall now attempt to prove, by adducing a few chemical facts in order to controvert the erroneous opinions entertained by the many.

Plants, differing in their generic and specific characters, laborate and assimilate food, each according to its specific character; therefore all and each require food suitable in all respects accordingly. Nothing can be more true than that the three organic elements—oxygen, hydrogen, carbon, are common to all; and it is equally so that the fourth element, nitrogen—otherwise called azote—enters into the composition of many. It is certain, however, that these four simple elements are susceptible of innumerable modifications, combining in proportions so indefinite as to admit of no comparison with the well-defined proportional alliances of ordinary chemical compounds. But independently of purely organic structure, plants endowed with life introsuscept a great number and variety of purely chemical, inorganic salts, and those chiefly from the soil.

The earths proper—of metallic origin—are also to a certain extent absorbed and deposited in certain specific conditions, varying according to the peculiar temperament of the vegetable subject.

If, then, any liquid manure is found to produce a marked effect upon a plant, that effect must depend chiefly, if not entirely, upon the salts which it holds in a state of aqueous solution; therefore, in order to understand the mode in which any given solution can act, we must submit it to correct analytic experiment. Let us take for the type that compound fluid which results from a portion of the best and purest Bolivian guano; for there we detect nearly all the elements which are traceable in the saline product of organised vegetable life. The soluble salts of such guano are sulphates of potass, of soda, and of ammonia; muriate or chlorides of soda and ammonia; phosphates of ammonia, &c.; and also a quantity of free urea. We do not pretend to determine the proportions or exact quantities of those salts, the variableness of guano being proverbial; but that they all, or most of them, are present, in certain proportions, may be considered an admitted general fact. The insoluble components of good guano consist chiefly of the bone phosphate from fish, reduced to a state of division so minute as to defy comparison—of urate of ammonia —of ammonio-phosphate of magnesia—and of some other minor ingredients, among which we have detected an oxide of iron, and a quantity of organic matter, that represents, as nearly as may be, the compound which of late has been termed *humus*, since it is destructive by fire, excepting that small portion of siliceous sand which most samples of guano are found to contain.

If, then, guano be employed as liquid manure, it is plain that every plant must be injured, unless it be constitutionally inclined to imbibe and receive nutriment from the salts contained; and even then the solution should be exceedingly weak, and be used with discretion.

Potter's guano appears to combine sulphate of ammonia as its chief active ingredient, common salt in smaller proportion, a quantity of powdered chalk (these two susceptible of mutual attraction), a little vegetable alkali, and much bone-dust. It is not guano, but a very useful dress for the farm,—and the liquid will contain the salts named, with the addition of some free ammonia, owing to the action of the potash upon the sulphate.

If steeped manures—as sheep-dung, horse-droppings, cow's, deer's, or pigeon's-dungs—be used, in a state of fermentation, a peculiar saline matter may be present, which, in all probability, will be most correctly called *humate* of *ammonia*, a compound that claims the strictest attention, and which we shall now attempt to describe.

This salt of ammonia is produced by the attraction or chemical affinity which exists between the alkaline base, *ammonia*, and that vegetable extractive matter that is known to modern chemists by the term of *humic acid*. To prove this assertion, and thus to acquire some knowledge of the true theory of manures, we recommend the inquiring reader to proceed in the following manner; but previously he must admit a few preliminary remarks.

There are three substances which can be taken as types, and used in the form of liquids. The first is the brown fluid that flows to waste from the dung-heaps of the farm: this is the natural product of fermentation, and when fresh may contain a portion of free volatile alkali (ammonia, or smelling-salts), but in a very short time an union takes place between the ammonia and the humic acid, and therefore the drainage in its ordinary state consists chiefly of water charged with *humate* of *ammonia*, whence it derives its dark tint.

The second typical substance is the liquid that is obtained by digesting decayed wood-earth, leaf-mould, heath or moor-soil, or old spit-dung, in a quantity of warm water holding ammonia, potash, or soda (but especially the first) in solution. The result of any of these processes is still a *humate*, whence it will be clear that decayed vegetable—or animal and vegetable matter, mixed as they are in the dung-hill, are resolved by slow decay into a hydro-carbonous mass, replete with *humus*.

Keeping in view the foregoing theoretic observations, let an ounce or two each of wood-earth, and the other substances named, be placed separately in half-pint glasses, and a large tea-cup (about 4 ounces) of scalding water be poured upon the earth &c. contained in each glass. Stir the whole well two or three times, and when luke-warm, suffer the solid matters to subside. The liquors will then be found more or less coloured; but upon adding to each a dessert-spoonful of strong solution of ammonia, they will become deeply tinted, and in some instances appear dark as porter: in other words, they will represent the drainage of the dung mixen, a glass of which should also be ready at hand as a standard of comparison. These preparations being made, and all the vessels standing side by side, the operator will be qualified to form some correct idea of the way in which liquid manures act, and of the errors which are but too commonly prevalent.

Prepare lime-water by slaking lime, fresh from the kiln, and pouring over it about a pint of cold water to every ounce of the powder; stir the cream of lime so formed, and pour it into a closed glass vessel. When the water has become bright, and all the lime has fallen to the bottom of the bottle, and when also the sediment of all the humous substances has subsided, take a table-spoonful of each, and put it into a separate wine-glass; do the same with the liquid from the farm-yard. Then, beginning with the last, drop in a little of the lime-water, stirring all the while, and mark the result. It will soon be seen that nearly all the colour has disappeared, and that a quantity of brownish-grey flocks has fallen to the bottom of the vessel. Proceed thus with all the solutions, and corresponding effects will be produced, making allowance for the difference which must exist between the substances employed. But so far as *humus* is concerned, so far will the results correspond, and there will be a deposit of flocks in all the glasses, with a manifest loss of colour in the floating liquids. If, instead of applying lime-water to fluid humates of ammonia, a portion of each of the solid humous earths be rubbed in a mortar with some cream of lime, no colour will be extracted, even by adding boiling water.

It thus appears that lime exerts a superior affinity upon *humic acid*, fixing it as an insoluble humate of lime: it likewise attracts it from every other known alkaline base.

The inferences to be drawn from the above experiment are these. All brown tinted liquid manures contain *humates* of an alkaline base: these are doubtful, if not dangerous applications, and lime is a remedial antidote.

If a weak, but perfectly clear solution of guano be occasionally employed, great effect has been produced: but then there remains little or no colour visible; therefore it contains no humate, but its virtue resides wholly in the soluble salts above enumerated.

Dry manures applied to the soil do not yield brown extracts to the moisture therein; and raw sap is always colourless: hence we conclude that brown liquid manures are in every case to be employed with the utmost circumspection; and that the *humic acid*, so long vaunted as an aliment, is in fact a poison, and constitutes the sterilising agent of peat, bogs, and barren turbaries.

PRACTICAL HINTS ON THE MANAGEMENT OF A FEW SELECT CLIMBING STOVE PLANTS.

(*Continued from page* 89.)

Since our last hints on this subject were committed to paper, we have had an opportunity of conversing with some of the first plant cultivators in the country, and of eliciting from several of the principal contributors to the metropolitan exhibitions their opinions as to the correctness of our views and practice with regard to training, and it is gratifying to know that by those most competent of judging, they were approved of. We therefore feel additional interest in pressing them upon the attention of our amateur friends, being convinced that if correctly carried out success will most assuredly crown their wishes.

In our remarks upon *Allamanda cathartica* and *grandiflora* we omitted to state that the blooming branches may be multiplied four-fold by stopping some of the strongest shoots, when they are about fifteen or eighteen inches long. About one third of the shoot must be removed, and this will induce the plant to produce four lateral branches, and hence you will procure four spikes instead of one of bloom. This practice, however, must only be adopted with those plants intended for autumn blooming, as, if carried out in the spring, it will be found difficult to get the plants into

D. splendens, we have little doubt but that it comes from some of the more temperate parts of Brazil, and as it came to this country from the Continent under the name of *Echites carassa*, it was in all probability introduced through the hands of the collectors to some of the continental nurserymen. In point of beauty it is scarcely inferior to *D. splendens*, being deeper in the colour of flower, more profuse as a pot plant, of smaller and neater habit, and more easy management.

Some cultivators profess to grow it in a cold pit or greenhouse, where it is said to luxuriate with great freedom, and we have heard of its growing freely as a greenhouse climber. So far, however, as our own experience extends, the cool end of the stove, or an intermediate house, appears the most appropriate position, and where it grows with the greatest freedom. It is, constitutionally, a delicate plant, and is very impatient of sudden changes. The slightest check at the roots, such as too much bottom-heat, or water, or a want of the latter element, will make it cast its leaves almost immediately, and once got into an unhealthy state, it will be found anything but an easy matter to reinstate its health. It is, therefore, a plant which requires to be grown steadily to do well, and consequently, both severe forcing and untimely checking must be avoided.

The plant first flowered in this country in the collection of G. W. Norman, Esq., of Bromley, but was figured for the Botanical periodicals in the following summer, by the permission of R. G. Loraine, Esq., from whose garden at Carshalton in Surrey, it was first exhibited.

Its management is much the same as *D. splendens*, except that it delights in a little more loam in the soil, and a rather lower temperature throughout the whole period of its growth. The best time to commence its cultivation is early after Christmas, when strong, well-rooted plants should be taken and potted into six or eight-sized pots, using a compost consisting of two parts turfy sandy loam, one part turfy sandy peat, one part semi-decomposed leaf-mould with plenty of sand, and two or three handfuls of charcoal lumps of various sizes. After potting, place the plants in a cool part of the stove, where they will get a gentle bottom-heat, and start them gradually; but so soon as they are fairly started, and the days begin to increase in length, endeavour to increase their growth by gradually raising the temperature until the minimum is 60°, and the maximum by fire-heat 70°. This plant delights in a moist atmosphere, and not too much sunshine; during the time it is in free growth, therefore, a thin shade of canvas or woollen netting must be laid over the glass, and if it is continued there until the plant begins to show bloom, it will be as well.

In training avoid overdoing the thing, and let the plant run rather wild than otherwise; indeed, if too closely trained, like many other plants, it will not bloom at all. A shield or flat trellis may, if preferred, be used for this plant; but for our own part we are rather prejudiced in favour of cylindrical trellises, being very simple and inexpensive, and withal very neat.

D. crassinoda, under good management, will bloom from June until October, or even later, and with from ten to thirty trusses of bloom expanded at the same time, is an object of very considerable interest and attraction. In the second and succeeding seasons the best system of management is to repot the plants early in January, removing as much of the old soil as you conveniently can, but not disturbing the roots too much. Repot, using the same soil as before, and as you put the plant on the new trellis, remove about one-third of the length of each young shoot. This plant strikes freely by cuttings in a gentle heat at almost any season, and may also be increased by layers. As a warm conservatory climber planted out in light rich porous soil, and assisted occasionally in the growing season with weak clear manure water, it is a plant of first-rate excellence, and a fit companion for *D. splendens*.

Gloriosa superba. This is a very high sounding name for an old but very magnificent plant, which has been in the country upwards of 150 years; but which, at the present time, is rarely seen, and then too frequently in very indifferent health. It belongs to the natural order *Liliacæ*, and, therefore, is a bulbous-rooted plant, annually making a new growth, and after blooming, dying down to the original tuber. The flowers, both in form and marking, are not less singular than some of the Orchids; and indeed so unlike most of the Liliaceous plants as to be easily mistaken by the common observer for an Orchid. The plant is a native of the East Indies, where it grows in jungles, scrambling over the trees in the tropical forests, and frequently attaining an elevation of from twenty to fifty feet. In this country; however, it does not grow so rampantly, though we have had it, when planted out in a corner of the tan bed, grow the length of a plant stove thirty feet long.

As a pot plant, it is of rather difficult management, refusing all control as to training during the early part of its growth, and refusing to bloom unless left almost in a state of nature until the first flower buds are of considerable size. Our system of management is to pot the bulbs about the first of February, in a compost consisting of leaf-mould, sandy peat, turfy loam, and silver sand, in about equal proportions, introducing lumps of charcoal of various sizes to secure the porosity of the soil. We generally put from two to five bulbs, being ruled by their size, in a twelve-sized pot, placing them about three inches below the surface, and covering them with very sandy soil. After this they are plunged in a bark bed with a brisk bottom-heat; but no water is given until the shoots begin to break through the soil; but after they are fairly started and the shoots grown to some length, manure water is regularly supplied. When the shoots are about four feet long, and before they become unruly, the plants are removed into No. 2 sized pots, using the same compost, with the addition of a little more loam to it. After this potting, the pots are plunged close to the back wall or end of the house, and the shoots are trained perpendicularly about a yard apart, and they are left uncontrolled, except in so far as their being prevented from becoming entangled.

In this state they are left until the first flowers are open, when, a barrel trellis being fitted to the pot, the shoots are carefully taken down and trained, taking every possible care to avoid bruising the stem or main branches. When trained they are again replunged and shaded from bright sunshine until quite recovered from the check, and the leaves have reassumed their wonted position.

After the plants begin to fade they must be gradually dried off, and be kept perfectly dry throughout the winter. The Gloriosas are propagated by seed sown in the spring, and by separation of the bulbs.

REMARKS ON THE CULTURE OF THE GENUS LESCHENAULTIA.

All the species of *Leschenaultia* (or *Lechenaultia*, as it was formerly called) are natives of New Holland, and, consequently, greenhouse plants; and as they are somewhat delicate in their growth, and very liable to die without any apparent reason, the following few particulars respecting their treatment may be useful to our readers.

The soil most suitable for their growth is composed of two parts turfy heath mould, one part sandy loam, and one part of leaf-mould and fine sand in equal proportions. If it can be conveniently done, this soil is better mixed together two or three months before being used, and if it was turned once or twice during that period, it would be an advantage, as these plants never appear to thrive well in soil newly dug from the pasture. This soil must not by any means be sifted, or even broken fine: it is always to be preferred when lumpy, and with plenty of fibre retained in it.

In potting, it is indispensable that abundance of drainage should be afforded; without this the plants cannot possibly thrive long; indeed, stagnant water at the roots perhaps destroys more plants of this genus than all other causes put together. This stagnation may arise either from bad drainage, soil which has been sifted or broken too fine and deprived of its fibre, or by placing the plants in too large pots.

To avoid injury from any of these causes, our rule is to grow them in small pots whilst the plants are young, to lay abundance of broken crocks, as drainage, at the bottom of each pot, so that the water may have a very free passage through, and to mix with the soil a quantity of broken crocks, pieces of freestone, and charcoal, the two latter about the size of a walnut; by these means the mould never becomes hard and solid, which to these plants is of great importance.

Another important point in potting, also, must not be lost sight of; if the plants are placed deep in the pots they often die, notwithstanding the utmost care and attention be paid to them. It is therefore always advisable to place the crown of the roots about on a level with the top of the pot, so that when the soil sinks around it, the plant will stand elevated on a slight mound. This effectually prevents injury from any occasional mishap in over-watering which might inadvertently occur.

Having carefully potted them without disturbing the balls, set the pots in a situation where they will stand near the glass, and have plenty of light and air; these are indispensable requisites.

With respect to watering, if properly potted, they may, during the growing season, have a pretty liberal supply at the roots, and likewise may be syringed pretty freely; but as the summer declines the quantity of water must be diminished, until, during the winter, no more will be required than just to keep the soil damp in the pots, and the foliage cannot then be kept too dry.

If the plants are a good size, it will be an advantage if they are turned out of doors about the end of July or beginning of August, and allowed to remain out for a month or six weeks. As their growing season will then be over, this exposure will harden the young wood, and prevent their liability to suffer during the dark days of winter. It is indispensable, however, that they be placed in a partially shaded situation, not under the drip of trees, but where the mid-day sun will not have full power upon them. With this one exception of placing out of doors, (which, if the season be very wet, must not be done,) it is better to keep them all the year in an exposed and airy part of the greenhouse.

About the beginning or middle of September, according to the state of the weather, again replace the plants in the greenhouse, and during the whole of the winter months water cautiously, and keep them free from frost, but otherwise keep them as cool and much exposed to light and air as possible.

The *L. biloba* and several other species have a disposition to grow straggling and naked: to prevent this, and make the plants spreading and bushy, carefully stop all the young shoots when they have grown an inch or two long, they will then break again; by this practice being judiciously followed, the plants, by the time they are two feet high, will be as much or more in diameter, and in the blooming season will be perfect pictures of flowers.

They strike readily from cuttings planted in pots of sand, covered with a glass, and placed in a moderate heat; they also often ripen seeds, which may be sown early in spring. If a quantity of young plants be grown every year, and stopped and treated as above, there will always be a succession of fine flowering specimens for display.

The best kinds are—*L. formosa*; an old, but very favourite species, with red flowers; *L. biloba*, an upright grower, with coarser foliage than the last, and bearing abundance of blue flowers; *L. arcuata*, a new species, with yellow flowers, blotched with red, and *L. splendens*, a kind with scarlet flowers: these will give a great variety of colour, and, if judiciously arranged, will make no mean display in the greenhouse in early spring.

CULTURE OF THE HABROTHAMNUS FASCICULATUS AND CORYMBOSUS.

THESE are elegant greenhouse plants, bearing panicles of flowers in profusion; they are scarce in collections at present, but their great beauty entitles them to a first rank amongst cultivated plants.

They are not difficult to cultivate if the following particulars be paid attention to; otherwise they are very shy of flowering. Their general habits are not much unlike those of *Brugmansia*, but their foliage is smaller and hairy, and their mode of flowering different.

In point of propagation, they strike freely from cuttings, which may be put in at any time from March to August, but those planted in spring are the most successful. Put three or four round the rim of a 60-sized pot of very light sandy soil, or sharp sand, either will equally answer; plunge these pots into a brisk bottom-heat, either in a cucumber-frame or a propagating.house, and shade them for a few days from the rays of the sun.

When struck, pot them off in small pots filled with light rich soil, composed of one part very sandy loam, one part heath mould, one part very rotten leaf-mould, and one part rotten dung; let these be all well beat and mixed together, but by no means be sifted, as this would separate the fibre, and allow of the soil becoming hard and close, which is always a disadvantage. In this soil they will grow with great rapidity, which should be as much as possible encouraged by a little heat and moist atmosphere.

As they advance in growth and become good sized plants, gradually expose them to a cooler atmosphere; and in all future pottings use a mixture of two parts sandy loam, one part heath-mould, and one part leaf-mould, leaving out the dung altogether, as this would tend to so encourage the growth, that few flowers would, at any time, be produced.

In potting give plenty of room in the pots, and lay a considerable quantity of drainage in the bottom, for although these are plants which, in their growing season, require abundance of water, yet they soon perish if there is any stagnation of it about their roots. No stated times can be given for the operation of potting, but this must always be done when the roots have spread through the soil and begin to form a mat against the sides of the pot.

If favourably grown, the young plants will, by the end of the summer, have become three feet, or more, high, and proportionably bushy and strong; then begin gradually to diminish the quantity of water, and on the approach of winter set them in a cool, dry, and airy place in the greenhouse, where they will be quite secure from frost, and administer very little water until the return of spring. In March use the knife pretty freely in cutting back the branches; this will make the plants handsome and bushy, and will likewise assist their flowering; then take off the old soil for an inch or two deep, and give a good top-dressing of new soil, as recommended for potting.

After being potted place the plants in a cool part of the stove, and begin gradually to increase the proportion of water at their roots, and occasionally syringe them over-head. As they advance in growth remove them to a warmer part of the stove, where they will enjoy a damp and close atmosphere, and if they are kept well supplied with water at the roots, and syringed over-head in sunny days, they will soon show signs of flowering, and exhibit large leafy panicles from eighteen inches to two feet in length of shining waxy flowers, of a deep orange crimson colour; which will be more than a recompense for all the attention they required.

When out of bloom, which will be about the end of May or beginning of June, turn the plants out of their pots, and plant them, without breaking their balls, into the open borders, into a light rich soil, and during the summer allow them to have every encouragement to make a fine growth, by giving plenty of water if the weather should prove dry, and occasionally a little liquid manure. In this situation they may stand until the second week of September.

In September carefully take the plants again out of the ground, pot them, with as little damage to the roots as possible; place them in a close pit or the stove for a few days, until they have recovered from being shifted; then remove them to the greenhouse; gradually diminish the quantity of water, and treat them exactly as recommended before.

These plants are well suited either for a greenhouse or conservatory, and will no doubt, in a few years, form splendid objects on our conservative walls, for which they are well adapted.

HINTS ON THE FLOWERING OF PLANTS.

No one can have walked abroad during the past fortnight or three weeks, where flowering trees and shrubs, whose blossoms in any measure approach those of a conspicuous character, have come within the field of observation, without having been struck by the overwhelming quantity of bloom that every tree and bush, to the extent of branch and branchlet of each, is destined, however briefly, to support.

In nature's and the cultivated garden, such a state of things have equally prevailed and thrust themselves upon our attention. Individual and assemblages of trees and shrubs, those with showy and those with inconspicuous blossoms, such as are grown for the value of their produce, as well as those maintained for ornament, have all exhibited, or indicate they will exhibit, similar features. There is enough in this, at least, to convince us that the influences which have wrought those effects which none can fail to admire, have not been partial, but universal in their operation. We may briefly glance at what those influences are.

Ordinary ideas respecting the wonderful development of blossom this season would lead us to attribute the display to last year's scarcity of bloom, but in doing so, we need scarcely observe, we commit error. That of which we write is undoubtedly chargeable to the account of last year, or rather to its extraordinary weather, and is too indisputable to require further mentioning. It might be instructive to inquire into and enlarge upon the processes, as they relate to the subject in question, acting through a summer like the last, in opposition to those in force during one the very reverse in character; but it would involve too serious an amount of theoretical detail for our present purpose. The object now in view is to suggest, very briefly, an idea or two, founded on recent experience, in connection with the subject professedly written upon.

Those who only give their attention, to a very limited extent, to gardening matters, cannot but have observed that a tropical sun of the power and continuance of that of part of last year, or one in degree similar, is always succeeded by comparatively like effects, to those which the present spring has produced. Herein is hidden that secret we will cursorily notice. The weather in that period of last year which is usually regarded, and generally is, the growing season, happened to be such as induced most plants, whether those which had an unlimited supply of nutriment at command, or those less favourably situated, to assimilate such food and dispose of it in the desired manner; and hence this spring's beauty of our gardens and orchards, and the increased delight the lanes and fields afford.

Perhaps it may here occur to our constant readers that we have said as much, and conveyed more on this subject formerly, in that part of an article on conservative walls which relates to the formation of their borders; and in other places (see pages 181, and 235, of volume xii). Similar ideas, doubtless, are traceable in each of the places to which allusion is made, but those ideas are of a nature which permits their repetition without a diminution in value taking place; and this is our excuse for recurring to them.

The time, too, at which they are reproduced is, it will not be disputed, appropriate. At the date upon which they will meet the public gaze, the time and attention of the gardening world will be occupied in storing their flower-gardens and grounds with plants which are to produce a display of bloom and beauty for the season.

In conclusion, we would remind all those engaged in the operation of turning plants into the open ground, that the common error committed in doing so predominates on the side of providing them with too much food rather than on that of arranging for too little. For the minor mistake, it is now getting well known there are simple and readily-applied correctives; but for the greater evils remedies are scarce, and those few are difficult of application except at the proper period.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR MAY, &c.

Akebia quinata. According to M. Decaisne, one of the species of this genus is commonly cultivated in the gardens of Japan, where it is called *Fagi-Kadsura-Akebi*, whence its scientific name. Professor Zuccarini has stated this to be the very Japanese plant described by Thunberg. Mr. Fortune, who sent it to this country, found it growing on the lower sides of the hills, in hedges, where it was climbing on other trees, and hanging down in graceful festoons from the ends of their branches. The colour of the flowers in China is of a dark brown, not unlike the *Magnolia fuscata*, and they are very sweet scented. In the garden of the Horticultural Society the flowers are much lighter in colour, and nearly scentless. There is every reason to suppose it will succeed well when grown on trellis in the open air.—*Bot. Reg.*, 28.

Bolbophyllum Lobbii. How fine a plant of its kind this is, may be surmised by its having been taken for a *Cœlogyne.* The flowers are yellow, shaded with cinnamon, spotted with light brown, and speckled outside with brown purple. They are full four inches across; are superior to any known species of the genus for beauty. Mr. Thomas Lobb sent it from Java to Messrs. Veitch, who have it for sale.—*Bot. Reg.*, 29, *descrip.*

Brassia brachiata. This beautiful Epiphyte was originally defined from a dried specimen, collected near the *Hacienda de la Laguna*, in Guatemala, by Mr. Hartweg. Like *B. verrucosa*, this species has the singular peculiarity of bearing upon its lip numerous flat warts, to which the green colour of that part is exclusively confined. This fine plant is best grown elevated on a pot well drained, and in a mixture of the fibre out of rough peat and half-decayed leaves, in equal proportions. When the season's growth is completed, it should be allowed a season of rest, which is best attained by withholding moisture, first from the atmosphere, and afterwards from the roots, and by reducing the temperature of the house to 58° or 60° by fire heat.—*Bot. Reg.*, 29.

Calceolaria amplexicaulis. A handsome and ornamental yellow-flowering *Calceolaria*, though, except in foliage, little different from many other forms of that genus. It is a native of Peru and Colombia. Humboldt met with it upon the banks of the San Pedro, between Chillo and Conocoto, at an elevation of from seven to eight thousand feet above the level of the sea; Mr. William Lobb found it at Muña, whence he forwarded seeds to Mr. Veitch, of Exeter; and Professor Jameson and Hartweg sent it from Quito.—*Bot. Mag.*, 4300.

Catasetum serratum. Nearly allied to *C. maculatum*, from which it differs from the sides of the lip not curving inwards, in the shortness of the columnal cirrhi, and in the emarginate apex of the lip. The flowers are nearly of the same size, but not spotted; they are pale green, with the convexity of the lip yellow. Sent from Panama to Messrs. Veitch, by Mr. Lobb.—*Bot. Reg.*, 24, *descrip.*

Cerasus japonica plena. This differs in no respect from the well-known double dwarf Chinese Cherry (or Plum), except in having perfectly white and very double flowers. A hardy shrub, growing freely in any good sandy loam, and increased by budding on a Plum stock. Introduced by Mr. Fortune from China, in 1846.—*Hort. Jour.*, vol. ii., p. 158.

Dendrobium Veitchianum. We are not sure that this will not prove a rival to the best of the East Indian Orchids. It is a most beautiful plant, with upright racemes of large mossy flowers, nearly two inches in diameter, and a fine stiff habit. Its sepals are a clear dull yellow, the petals pure white, the lip deep green bordered with white, and richly marked with crimson veins. A native of Java, discovered by Mr. Lobb.—*Bot. Reg.*, 25, *descrip.*

Echites Franciscea. A fine fragrant hothouse climber, of considerable beauty, the introduction of which was effected by His Grace the late Duke of Northumberland. It appears to have been found in the Brazilian desert, near the river San Francisco, whence it takes its name. —*Bot. Reg.*, 24.

Forsythia viridissima. This new plant, noticed page 67 of the present volume, has lately flowered in the Horticultural Garden, and proves to be a plant of extraordinary beauty. Its branches are loaded with deep golden-yellow blossoms, which appear before the leaves are fully unfolded.—*Hort. Jour.*,vol. ii., p. 157.

Ipomæa muricata. A beautiful little species of *Ipomœa*, not very aptly named *muricata* by its first describer. Tubers were sent by Mr. Purdie from open grassy mountains of the Nivada de Santa Martha, New Grenada.—*Bot. Mag.*, 4301.

Jacquemontia canescens. A perennial twining plant, with the stems and leaves closely covered with a short down, which is brown and white. The flowers grow in close cymes of nine to eleven each, on stalks somewhat shorter than the leaves. They are of a clear bright blue, and very handsome. It requires the shelter of a greenhouse, and strikes readily from cuttings.—*Bot. Reg.*, 27.

Lælia cinnabarina. The Orchidaceous house of the Royal Gardens owes the possession of this plant to the Messrs. Loddiges, who received it from Brazil. It appears to have been first introduced, however, from that country by Mr. Young, of Epsom, in 1836. The flowers are produced at the extremity of a raceme, usually five or six in number, of a yellow scarlet.—*Bot. Mag.*, 4302.

Macromeria exserta. This is a fine half-hardy perennial, growing from two to three feet high, if potted in a mixture of sandy loam and fibry peat in equal parts. It is increased by seeds, and bears abundance of yellow flowers, from August to October, if kept in the greenhouse. —*Bot. Reg.*, 26.

Marsdenia maculata. This has been long cultivated in the stove of the Royal Gardens of Kew as a new *Asclepiadeous* plant, which had been sent by the late Mr. Lockhart of Trinidad. It is a great climber, and flowers readily in June: the flowers are of a dark purple colour, and the foliage is large, and spotted with pale yellow, like those of *Aucuba japonica;* but with spots more regular, more equidistant, and more confluent.—*Bot. Mag.*, 4299.

Ophrys fuciflora. Considerable confusion exists among the curious little plants which constitute the genus Ophrys. *O. fuciflora* is identical with *O. Arachnites* of *Eng. Bot.*, *supp.*, 2596. —*Bot. Reg.*, 25.

Phalænopsis amabilis. This noble Orchidaceous plant, though introduced to our stoves ten years ago, by Mr. Cuming from Manilla, is still perhaps the choicest and most highly prized of the family. Indeed there is not a more chaste or lovely flower among all the *Orchideæ*; and it has the merit of continuing a long time in blossom. The species was first detected at Amboynia, by Rumphius. In Java, and probably in the Malayan islands generally, it seems abundant. It grows freely, attached to a piece of wood, together with a little moss, suspended from a rafter of the stove.—*Bot. Mag.*, 4297.

Renanthera matutina. A splendid Epiphyte sent from Java by Mr. Thomas Lobb, to Messrs. Veitch. It produces a large branching panicle, each of whose arms is from six to nine inches long, and carries from six to twelve flowers.—*Bot. Reg.*, 26, *descrip.*

Ruellia Purdieana. A desirable Acanthaceous plant for cultivation in the stove. It strikes freely from cuttings, blossoming at an early period, and at different seasons of the year, and the flowers are a full, deep crimson-lilac.—*Bot. Mag.*, 4298.

Saccolabium miniatum. A Java Orchid, imported by Messrs. Veitch, and flowered both by Mr. Rucker and Mr. C. B. Warner. It is not to be traced among Blume's species, and seems new. Its flowers, of a gay vermilion or rich apricot colour, although somewhat small, have an extremely lively effect; they grow in upright racemes, about ten together.—*Bot. Reg.*, 26.

Spiræa pubescens. This is a small grey shrub, with little hemispherical umbels of white, small flowers, having a slight fragrance. In habit, it may be compared to a weak *Spiræa opulifolia.* Its leaves, when full grown, are about an inch-and-a-half long. The plant appears to be nearly hardy; grows about two feet high, and flowers freely in any good garden soil. We may expect this to prove an ornamental shrub for planting in sheltered situations and warm districts.—*Hort. Jour.*, vol. ii., 157.

Telipogon obovatus. A curious plant sent from Peru, by Mr. Lobb, to Messrs. Veitch, by whom it has been sold. It has not yet flowered, but will prove a very nice plant when it does blossom. Its flower-stem is six inches high; the flowers are bright yellow, an inch-and-three-quarters in diameter.—*Bot. Reg*, 27, *descrip.*

PLANTS, NEW OR INTERESTING, IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES AND GARDENS.

Azalea, *var.* **Fielder's white.** In Mrs. Lawrence's collection at Ealing, this fine variety is now exhibiting its large and very good shaped flowers, of a pure white, spotted with greenish spots on the upper petals. The excellence of the flowers will gain this variety a good reputation.

Achimenes cupreata. A curious-looking plant, having foliage much in appearance of *A. picta*, but without the variegated character; with small, but very bright, scarlet flowers, slightly notched at the edges, and yellow in the throat. Its habit is that of a creeper, hanging over the side of the pot about two feet. What may be its value as to luxuriance of flowers, time alone can inform us, the specimen here noticed having but one flower expanded. It is from the collection of His Grace the Duke of Northumberland, Sion House.

Brugmansia sanguinea. This fine old plant has been for some time past flowering in the most luxuriant manner in the conservatory of the Horticultural Society, Chiswick. It is well known for its long, large, red and yellow, trumpet-shaped flowers, hanging from a mass of coarse foliage, which, in a small plant, has not much attraction; but in the specimen here noticed, which is large, being fourteen or fifteen feet high, and nine or ten feet in its widest part, and having such a profusion of flowers upon it, the plant is exceedingly attractive.

Daviesia, spe. A handsome species has lately been flowering in the Nursery of Mr. Glendinning, at Chiswick. It has a tortuous stem, throwing out at every turn a leaf or flat spine, very sharp-pointed, at the axils of which the flowers are produced in twos or threes, small, but a very rich orange-yellow, having a dark spot of chocolate in the centre. It is a very handsome addition to the species, and now flowering for the first time in this country.

Dendrobium spe. nov. At the recent Horticultural Fete, Messrs. Veitch of Exeter exhibited three new species of the Dendrobium. The first, in the bulb, is much like *D. Paxtoni*, as well as in the flower, having racemes holding upwards of ten yellow flowers, with a small spot of deep crimson in the throat of the labellum, which is of a paler yellow, and beautifully fringed at the edges. The second, in flower, is allied to *D. aggregatum*, only smaller, yellow, and the labellum being fringed; the bulbs about four inches long, very thick and tapering to each end The third species has bulbs about eighteen inches long, and half an inch in diameter, round and smooth, producing its flowers in pairs, at every joint up the stem: the flowers, though small, are very pretty, being of a delicate rose-colour, richly improved by a large blotch of bright yellow in the labellum. The whole of these specimens are without foliage.

Erica Imperialis. This handsome species has lately developed its fine flowers in the nursery of Messrs. Rollisson, Tooting. It is rather rare in our gardens, though introduced many years since, and, taking the size of its flowers, which are two inches long, narrow, pale pink from the calyx, shading to near the division of the tube, when it becomes a bright green, these radiating at right angles with the stem at the top of each shoot in six, eight or more flowers, with foliage good and very handsome, makes the plant one of very considerable merit, and well deserving its name.

Gardenia Fortuni. A very handsome plant, having flowers as large and double as the White Camellia, richly scented, and a pure white, well relieved by a mass of rich, dark-green, glossy foliage. This species was introduced by Mr. Fortune to the Horticultural Society's Gardens, Chiswick, where it has recently been in flower.

Gompholobium spe. nov. A very handsome and superior species is now flowering with Mr. Ayres, gardener to Jas. Cook, Esq., Brooklands, Blackheath Park, and, as compared with *G. polymorphum*, exhibits a decided superiority, whether from its luxuriant habit, or the brilliant crimson, and profusion of its flower. This species will no doubt supersede all the varieties of *G. polymorphum* in cultivation.

Houletia spe. A curious rather than handsome plant of this genus has been flowering from an imported bulb at Messrs. Rollisson's, Tooting. It is very like *H. Brocklehurstiana* in habit as well as the general appearance of its flowers, being about the same size, growing erect, of a dingy brownish chocolate (without the spotting) and a little relieved with streaks of pale yellow in the column. The flowers have a strong pungent odour, much like that of cloves.

Hoya campanulata. A pretty, though, from the absence of colour, not a very interesting species, has been exhibited at Chiswick by Messrs. Veitch, Exeter. It has pale yellowish-green flowers, beautifully formed, like a number of inverted cups suspended among its rich green foliage, and having a delicious lemon odour, will render its want of colour less noticed, and make it a desirable addition to the stove climbers.

Odontoglossum cuspidatum. Messrs. Rollisson have recently flowered this species: it has long, pointed sepals and petals, of a greenish ground, striped and spotted with brown. The bulb is small and flat, with foliage about six inches long, and an inch broad, of a bluish-green colour.

Oncidium concolor. In Messrs. Veitch's collection, we noticed a handsome plant of this species flowering most luxuriantly: it is singularly different from all the species of *Oncidium*, by having an uniform colour (bright yellow) in the whole flower, labellum, sepals and petals. This species will always attract notice when seen in good flower.

Rhododendron, *var.* At this season, numerous fine hybrid varieties of this noble genus are developing their flowers in the most luxuriant profusion, the finer varieties of which we will proceed to notice. *R. metropolitana* is now flowering splendidly with Mr. Edmunds, gardener to His Grace the Duke of Devonshire, Chiswick: it was raised some years ago by Mr. Ronalds, Nurseryman, Brentford. The specimen has immensely large trusses of bloom, one of which held upwards of twenty-six flowers, each flower averaging four inches and a half in diameter; the inflorescence is of a deep rose-colour, beautifully spotted in the throat. The habit of the plant is bold, of a dark green on the upper side, and slightly bronzed beneath. At the nursery of Messrs. Knight and Perry are several handsome varieties in flower, including those splendid specimens of the true *R. arboreum*, which has been flowering for some time in a most luxuriant manner, and receiving the admiration of every beholder. Then they have *R. fastuosum flore-pleno*, a handsome lilac flower, very large, and with good substance of petal, the truss holding upwards of twenty flowers, each flower being about three inches and a half in diameter. This variety is remarkable for a petal-like development of the stamens; it is perfectly hardy, and one of the handsomest of its class. Another variety worthy of notice, possesses a changeable feature in the colour of its flowers; first, the bud—which is a brilliant crimson—when the flower opens it is a rosy carmine, and as it ages becomes paler and paler, until near white; so that a good specimen, in flower, has the appearance of being composed of different varieties grafted on one stem. We noticed another hybrid, raised between the Azalea and Rhododendron, having the foliage of the former, and flowers—a rich pink—of the latter, the whole of the petals being spotted with dark colour. Mr. Gaines, Nurseryman, Battersea, has a pretty hybrid, *R. Jenny Lind*. It is small, of a bluish colour, and profusely spotted on the upper petals. The foliage is very neat. We are not aware whether it is hardy.

Tropæolum azureum A well-grown specimen, covered with its pretty, bluish flowers, has been exhibited by Mr. Green, gardener to Sir E. Antrobus, Cheam. This species, now introduced some years ago, has been almost forgotten, whether from a difficulty of culture or what we know not: however, this specimen cannot fail to make the plant an object worthy the attention of the possessors to cultivate it in a similar manner.

Vanda cristata. This beautiful and singular-looking plant has been flowering finely in several collections this season, but in none was it so freely in bloom as in the collection of Mr. Schroeder of Stratford Green, where it has thrown out upwards of sixteen of its beautifully striped flowers, forming a very attractive species.

Viburnum spe. nov. Two species of Viburnum have lately been flowering in the gardens of the Horticultural Society, Chiswick. They are of the purest white, one of them is capitate, with trusses as large as the Hydrangea; individual flowers about an inch across. The other produces a greater number of trusses along the stem, smaller, about three inches in diameter, while the individual flower is semi-double, about half an inch across. The plants are shrubby, and we believe, hardy. They were introduced by Mr. Fortune, from China.

Weigelia rosea. This charming plant cannot be noticed too highly, having several superior points to recommend it; first, its being perfectly hardy, having stood out the whole of last winter in the Horticultural Society's Garden, Chiswick, and is now growing luxuriantly; secondly, the colour of its flower—varying from a delicate rose, almost white, gradually increasing in depth to a deep pink, when the flower dies. These qualities, added to its profusion of bloom, we feel assured of its becoming a general favourite with every one. It is now richly in flower in the conservatory at Chiswick, and was introduced there by Mr. Fortune, from China.

OPERATIONS FOR JUNE.

In plant-houses this month's proceedings are principally routine. All the appliances of growth must be called into action and maintained where growing plants exist, and the greatest diligence exercised in the suppression of insects. Plants whose growth has ceased should now be placed to rest in cool situations, or in the open air, according to the kinds.

Choice Orchids in flower, as well as any other esteemed plants in a like condition, may be removed to where their beauties will be prolonged and more agreeably enjoyed.

Indian Azaleas, and any other greenhouse plants of like habit, now the blooming season is over, may be placed in a warm and moist atmosphere, and occasionally watered with very diluted liquid manure, &c., to excite a robust growth.

Plants having very fine fibrous roots, as the Heaths (*Erica*), &c., must now be diligently attended to in respect of water. A glazed cold pit is perhaps one of the best erections for the accommodation of the genus *Erica*, and other plants with similar habits, during the summer, as they can be left perfectly exposed, and covered at pleasure.

Pelargoniums which are not to be turned in the borders, but are intended for specimen-plants another season, give abundance of light and air, and by no means allow any plants to crowd each other, at this time of the year especially.

Propagation of stove and greenhouse plants by cuttings, and other means; gathering and sowing choice seeds, hybridising, and a thousand other operations too numerous to mention, now all crowd upon the attention of the cultivator, and demand immediate and persevering exertions.

One great feature in out-of-door culture in the flower department for the present month, is the continuation of turning out plants into the prepared beds and borders. A great deal of this work of course has already been done; but this late season it is not to be expected; but the heaviest part yet remains to be done.

The first and most essential point to be regarded in removing plants from pots into beds, &c., is to ensure that their balls, or any quantity of earth adhering to their roots, is wholly and thoroughly moist. We have formerly directed attention to this particular, and experience warrants our again noticing it.

Every plant requiring it, should be amply secured before the operation of inserting it in the soil is considered complete. In the case of dahlias and plants of that description, this is especially necessary; and securing the trailing branches of dwarf and spreading kinds, is scarcely less important. Hooked pegs are the most readily obtained, and are perhaps the most suitable of anything for fastening spreading plants, and stakes of proper thickness and height must be resorted to, where taller plants have to be supported. It is not an unusual practice when planting out dahlias and other tall growing kinds, whilst the plants are very small, to insert along with each, a stake which will be sufficient to support it when full grown. Under certain circumstances the proceeding of which we write is justifiable, and indeed we have recommended its adoption; but generally speaking, even for the sake of appearance, it is far preferable to employ that kind of support the present necessities of the plants demand, and change them again as they require it hereafter. To dahlias and other plants whose roots are liable to receive injury from stakes being forced into the soil near them; it would be an advantage if the stake first inserted was of the same thickness as the one intended to support the full-sized plant, and then the one could be replaced by the other without any damage happening to the roots.

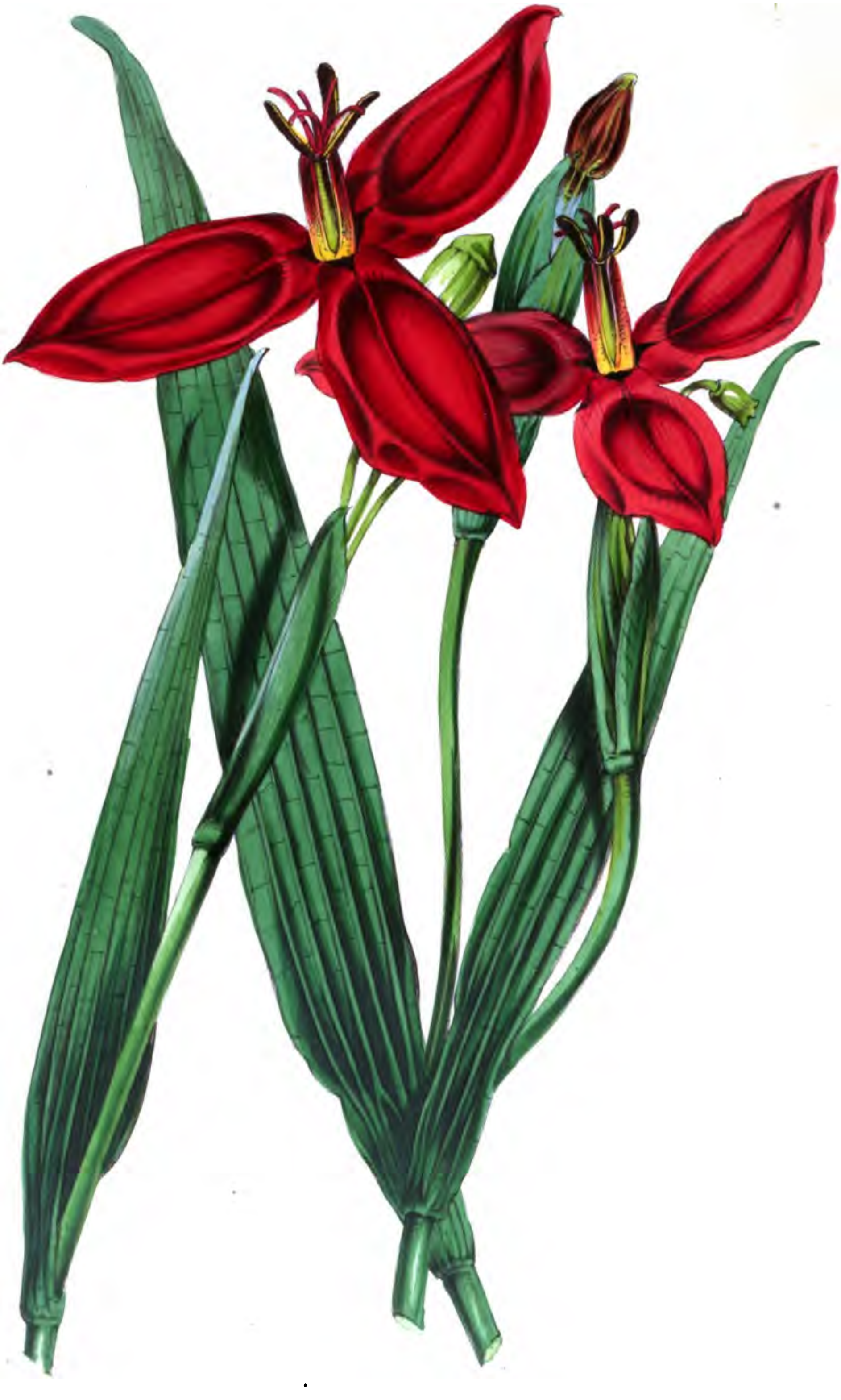
Duplicate stove and greenhouse plants, which are not required for the houses, should now be turned out without delay, and some of both classes may be plunged in their pots, or turned into the open borders for the season. The progress they make, and the extent to which they are benefited by such treatment, is great. Good judgment must of course guide the selection of kinds so treated, and all due care given as to the time and manner of restoring them to proper shelter again.

Annuals may yet be transplanted, and seeds of many sown to produce late flowers. Fully matured choice bulbs ought not to be allowed to remain in the ground, and no bulbous or other plants be permitted to ripen seeds, unless it be particularly desirable to obtain such. Of course annuals are excluded from this remark.

Plant pink pipings and propagate pansies or any other plants, which point out this as the proper period for their increase. Thinning the buds of pinks, and tying carnations to neat stakes, are amongst the operations now necessary.

The prevailing weather will determine how far in the open air watering-pots should be in requisition, and the condition of plants whether an occasional supply of weak liquid manure might prove advantageous.

General out-of-doors cleaning; miscellaneous business, much of which will not now admit of the least neglect; securing and training climbers; tying plants generally, for growth is at this time very rapid; thinning annuals, and watching after depredators of every kind, are among the many matters which must now be attended to.



Holden, del & lith

Rigidella orthantha.

RIGIDÉLLA ORTHÁNTHA.

(Upright-flowered Stiff-Stalk.)

Class.
MONADELPHIA.

Order.
TRIANDRIA.

Natural Order.
IRIDÀCEÆ.

Generic Character.—*Perianth* three-leaved; *leaves* imbricated at the base, convolute, bound together below the middle; limb concave, revolute, spirally twisted after expansion. *Stamens* three, joined together in an exserted tube. *Anthers* linear, erect, free. *Stigmas* three, bipartite, appendiculate at the back, opposite the anthers; lobes linear, papillose at the apex. *Capsule* papyraceous, apex three-valved, many-seeded. *Seeds* subglobose, dotted. *Raphe* and *chalaza* conspicuous.—*Mag. Bot.*, vol. vii., t. 247.

Specific Character.—*Plant* a bulbous perennial, growing about eighteen inches high. *Stem* herbaceous. *Leaves* lanceolate, plaited, sheathing, pale green. *Bracts* in conjunction, sheath-like. *Flowers* terminal, fasciculate, nodding. *Perianth* three-leaved, deep vivid scarlet, and a triangular black spot at the base of each leaf; somewhat concave, divided to the base. *Anthers* linear, dark brown. *Stigmas* deep pink. Fruit triangular.

This new and brilliant-flowering bulbous plant was blooming in the stove of Messrs. Knight and Perry, Nurserymen, King's Road, Chelsea, last October, when our drawing was made.

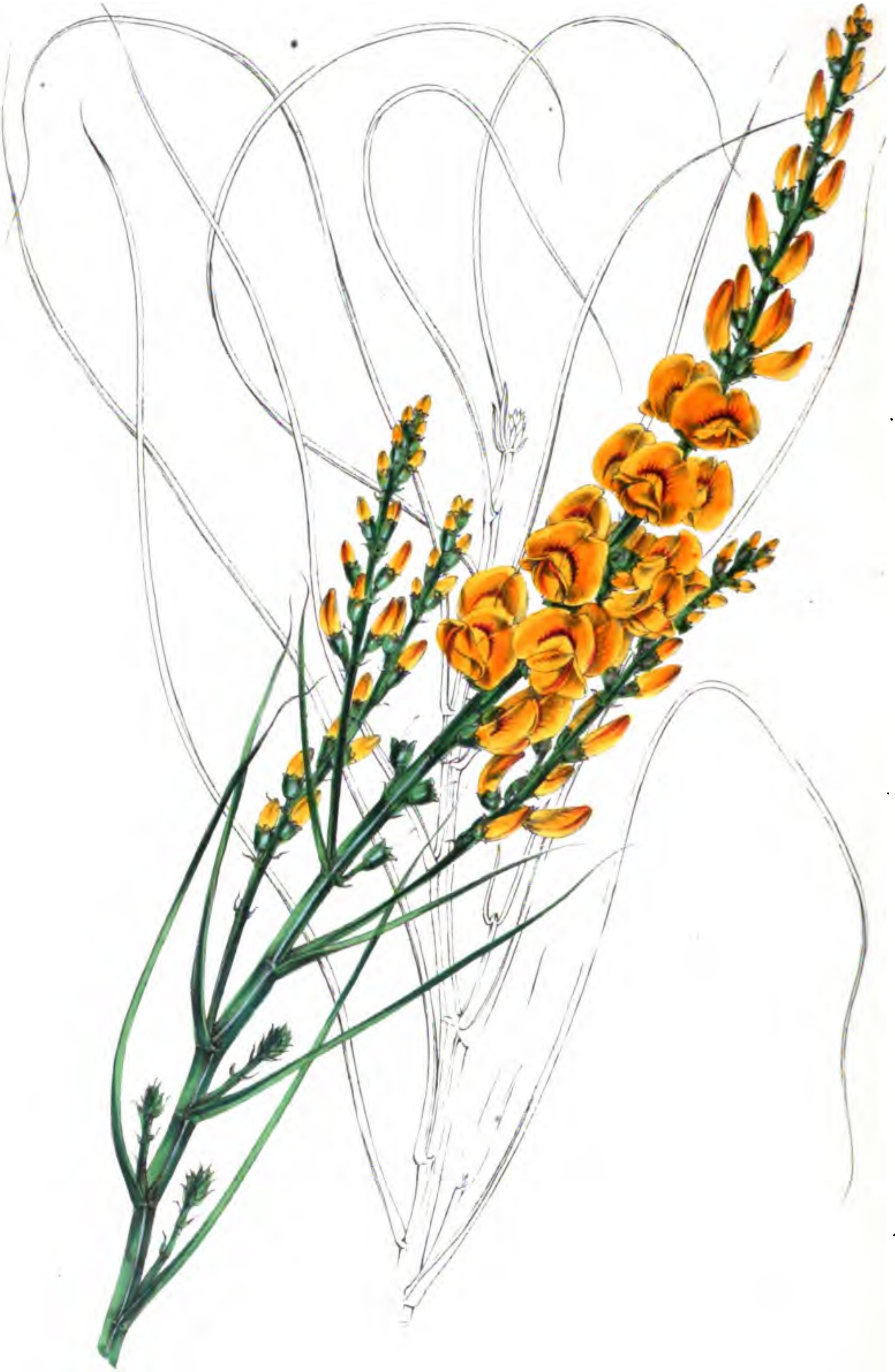
The rich and deep scarlet of the flowers, contrasted with the delicate green of the foliage, renders it a very conspicuous object, surpassing in several respects the *R. flammea* figured *Mag. Bot.*, v. 7, t. 247, to which in its general aspect it bears some resemblance. The flowers, however, of this species, although nodding, are not pendulous, neither does the limb assume that reflexed form which, in the *R. flammea*, is so distinguishing a character. The flowers, like those of the last mentioned species, are developed in a very short space of time, and decline with nearly the same rapidity, so that the duration of each is very limited; but by the successive opening of others each day, the flowering season is prolonged.

Nothing is known of the history and introduction of this species; probably, however, it is a native of Mexico, and found its way into Europe through some of the continental travellers, and from thence was introduced into England.

As far as our knowledge of its culture extends, it requires the temperature of a mild stove to bring it to perfection. Pot in a mixture of sandy heath mould, leaf mould, and loam; and be careful to give a good drainage. When the plant comes into flower, remove to a warm greenhouse, where probably the flowers will be less fugitive. After the season of growth is over, and the leaves are dead, either take up the bulbs or place the pot in a cool part of the greenhouse, where it will be perfectly free from moisture, until the season of growth returns; then take out the bulbs, repot and start them into growth in a gentle moist heat.

It may be increased by offsets and seeds, like other plants of similar habits.

The generic name is derived from *rigidus*, rigid; in reference to the stiffness of the peduncles when supporting the seed-vessels.



S. Holden del & Lith.

Viminaria denudata.

VIMINARIA DENUDATA

(Robert Brown.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
LEGUMINOSAE.

Generic Character.—[illegible] *Specific Character.*—[illegible] *Petals* [illegible] racemose [illegible] *Stigma* [illegible] without a stipe [illegible] *Viminaria denudata,* [illegible] *Pultenaea juncea.*

This singular but pretty flowering plant has been long an inhabitant of our greenhouses, having been introduced in the year 1789, but by whom is not exactly known. It is a plant of easy cultivation, and was therefore at one time very common in almost every collection; but of late years, however, since so many beautiful kinds of Leguminosae have been introduced from Australia, where they abound in such great variety of colour and form, this good old plant has been partially neglected, and is now far from being so common as its beauty deserves.

Its naked leafless appearance when not in bloom is certainly an apparent drawback to its beauty; but when its masses of flowers are produced all over the plant, shooting out a foot or more in [illegible] large orange and red blossoms, a more desirable greenhouse shrub can scarcely be looked upon. It grows freely in a dry, airy situation, potted in sandy heath mould, not packed too firmly; the pots, however, must be well drained, as, like the species of Dillwynia, the plant is more likely to perish from over-watering than from any other cause; it is always advisable to put a good handful of potsherds at the bottom of each pot. If this be properly attended to, the plant may receive a liberal supply of water in the season of growth, but in winter it is always the best to give no more than will just moisten the soil.

Cuttings of the half-ripened wood strike root easily, if planted [illegible] and placed under a glass in a gentle heat, but they must be ve[illegible]

VIMINÀRIA DENUDÀTA.

(Leafless Rush-Broom.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
LEGUMINACEÆ.

GENERIC CHARACTER.—*Calyx* five-toothed, angular. *Petals* of unequal length, papilionaceous. *Style* capillary, longer than the ovary, which is two-seeded. *Stigma* simple, acute. *Legume* valveless, ovate. *Seeds* without a strophiola.

SPECIFIC CHARACTER.—*Plant* a leafless shrub; *leaves* abortive. *Flowers* racemose, bright orange; teeth of calyx erect, short.

SYNONYMES.—*Daviesia denudata*, *Sophora juncea*, *Pultenæa juncea*.

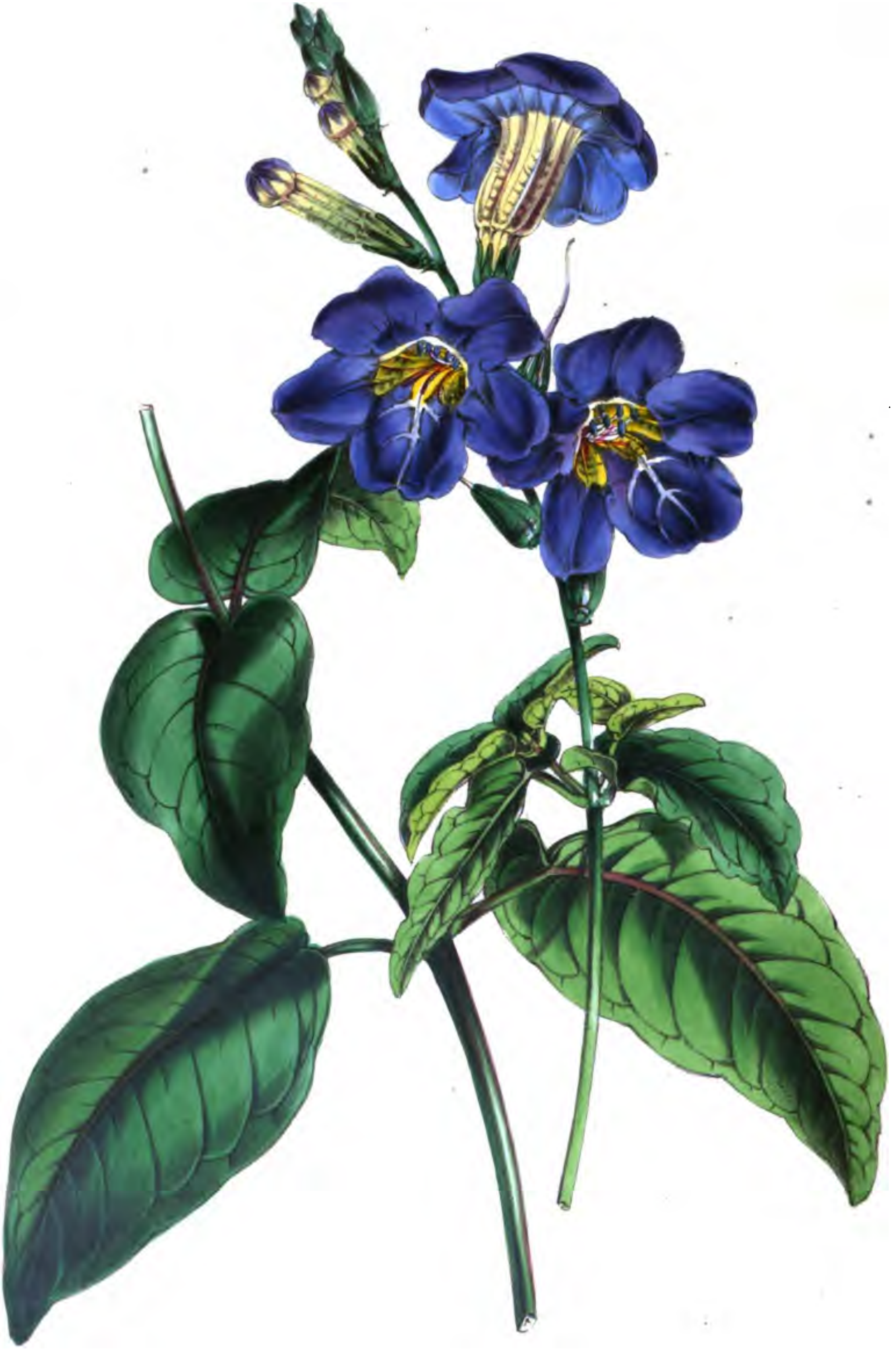
THIS singular but pretty flowering plant has been long an inhabitant of our greenhouses, being introduced in the year 1789, but by whom is not exactly known. It is a plant of easy culture, and was therefore at one time very common in almost every collection in this country: of late years, however, since so many beautiful kinds of Leguminaceæ have been brought from Australasia, where they abound in such great variety of colour and form, this good old plant has been partially neglected, and is now far from being so common as its beauty deserves.

Its naked leafless appearance when not in bloom, is certainly an apparent drawback to its beauty; but when its racemes of flowers are produced all over the plant, shooting out a foot or more in length, and completely covered with bright orange and red blossoms, a more desirable little greenhouse shrub can scarcely be looked upon. It grows freely in a dry, airy situation, potted in sandy heath mould, not broken too fine; the pots, however, must be well drained, as, like the species of Dillwynia, this plant is more likely to perish from over moisture at the roots, than any other cause; it is always advisable to put a good handful of potsherds at the bottom of each pot. If this be properly attended to, the plant may receive a liberal supply of water in the season of growth, but in winter it is always the best to give no more than will just moisten the soil.

Cuttings of the half-ripened wood strike root easily, if planted in pots of sand, and placed under a glass in a gentle heat; but they must be watered with caution, and very sparingly. After they have struck root, pot them off, and place in a warm shaded situation until they have begun to grow; they may then be treated like the old plants.

Our drawing of this pretty plant was made in June, 1842, at Messrs. Young's, of Epsom.

The generic name is derived from *vimen*, a twig, in allusion to the naked, twig-like appearance of the plant.



C. Holden del & Lith

ASYSTÀSIA COROMANDELIÁNA.

(Coromandel Asystasia.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
ACANTHÀCEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, equal. *Corolla* hypogynous, somewhat funnel-shaped; limb five-parted, segments nearly equal. *Stamens* four, inserted in the tube of the corolla, didynamous; *filaments* united at the base. *Anthers* two-celled, cells narrow, parallel, having callosities or appendages at the base. *Ovary* two-celled, cells two-seeded. *Style* simple. *Stigma* capitate, two-lobed, or two-toothed. *Capsule* clawed, four-sided, two-celled, four-seeded.

SPECIFIC CHARACTER.—Somewhat shrubby, branched; *Branches* zig-zag, slightly downy as well as the leaves. *Leaves* opposite, ovato-cordate, soft, somewhat waved, pale beneath. *Petioles* shorter than the leaves, connate at the base. *Racemes* axillary, six to ten-flowered. *Flowers* nearly sessile. *Calyx* of five, deep, lanceolato-subulate, erect segments, slightly hairy; at its base are small appressed *bracteas*. *Corolla*, with the tube long, infundibuliform, pale green, sprinkled with purple, bent at the contraction; limb deep lilac, spotted with darker spots; of five spreading, rounded, waved, unequal segments. *Stamens* four, didynamous, united at the base of the filaments, included. *Ovary* oblong, hairy, inserted in a cup-shaped *disk*. *Style* inserted obliquely at the top of the germen, hairy at the base. *Stigma* two-lobed.—*Hooker, Bot. Mag.*, t. 4248.

SYNONYMES.—*Ruellia Coromandeliana, R. secunda, R. intrusa, R. obliqua, Justicia Gangelica.*

THIS very handsome species of *Asystasia* is perhaps the most desirable of the whole genus, both from the freedom with which its flowers are produced, and their size and colour. It has been known to exist in India for many years past, but although far from being scarce in that country, we are not aware of its having reached Europe in a living state until 1844, when specimens of it were brought to this country. One of these, in August, 1845, flowered in the stove of Mr. Henderson, Pine-apple Place, Edgeware Road, London, when our drawing was made.

It is a plant of easy culture, growing freely in a warm and moist stove, with plenty of pot-room, and a liberal supply of water when in a growing state, both at the roots and over the foliage. Good drainage is also very essential to its prosperity.

The most suitable soil is a mixture of sandy heath mould, leaf mould, and a light loam, in about equal proportions, not sifted or beat very fine, but in a lumpy state and containing plenty of fibre.

The time of its flowering is through the whole of the autumn months, commencing about the beginning of August, and continuing until about the end of November. It strikes freely from cuttings of the half ripened wood planted in pots of sand or sandy soil, and placed in a brisk moist heat under a glass.

The meaning of the generic name is unknown, "but the genus was founded by Blume on a Java species."—*Bot. Mag.*

DIÁNTHUS HENDERSONIÀNUS.

(Mr. Henderson's Pink.)

Class.
DECANDRIA.

Order.
DIGYNIA.

Natural Order.
CARYOPHYLLÀCEÆ.

Generic Character.—*Calyx* tubular, five-toothed, furnished at the base with two, four, or six opposite imbricate scales. *Petals* five, with long claws. *Stamens* ten. Styles two. *Capsules* one-celled. *Seeds* flat, convex on one side, and concave on the other, peltate. *Embryo* scarcely curved.—*Don.*

D. Hendersonianus.—A Garden Hybrid.

Our drawing of this very beautiful Pink was made in July last, at the nursery of Mr. Henderson, Pine-apple Place, Edgeware Road. No particulars are known respecting its origin, or by whom raised, but from its mode of blooming and general growth we suspect it to be a hybrid betwixt *D. càryophyllus* and *D. chinensis*, the leaves and flower-stem resembling the former, and the flowers approaching those of the latter.

It forms a very brilliant border plant, and is also well suited for pot culture, the flowers continuing to be produced for a considerable time. We have adopted the name by which it is known in the nurseries, and have no doubt of its becoming a general favourite with cultivators.

It is increased by cuttings and pipings, put in at the same time, and in the same manner as those of the common Pink (*D. plumarius*), and requires similar soil and treatment.

The generic name is derived from *Dios*, divine, and *anthos*, a flower, in allusion to the exquisite fragrance and beauty of the flowers of most of the species.

DIANTHUS HENDERSONIANUS.

[illegible] DIGYNIA.

[illegible] on the other [illegible] [illegible] —A Garden Hybrid [illegible]

[illegible] made in July [illegible] particulars [illegible] and *D*[illegible] the [illegible]

[illegible] well [illegible] the name [illegible] known [illegible]

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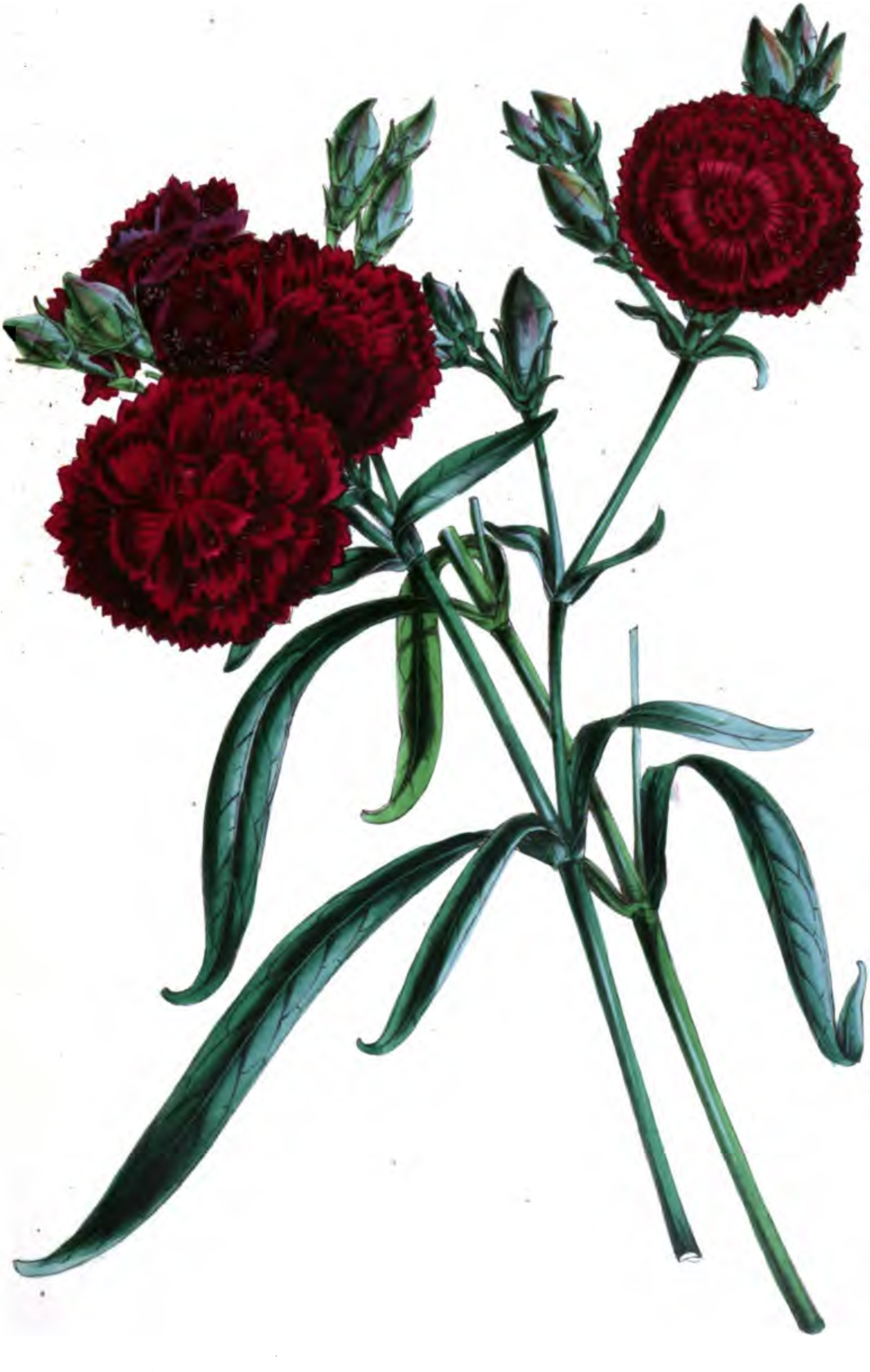
[illegible] *Dis*, [illegible] the [illegible]



S. Holden. del. & Lith.

Dianthus Hendersonianus.

TEMPERATURE AND METEOROLOGY.

Our remarks, though hypothetical in appearance, are intended to have a purely useful and practical bearing. The present year, or, rather, the two last entire seasons of Winter and Spring—the former commencing with the cold weather of November—have presented so many striking phenomena, as not only to command reverential wonder, but to prove that the science of Meteorology possesses peculiar interest, and claims the full exercise of the gardener's observant and reflecting faculties. We do not propose to amuse and mystify by the assumption of prognostics; let any one retrace the absolute antagonism of the two last seasons, commencing with the third week of November in each year, and reflect that the sun rose at the same moment, that his course throughout the several days of any given period, and his meridian altitude, were identical, and the fallacy of prediction must be self-evident. Yet causes, agencies—active and unerring—there must have been, to produce the almost exceptionless warmth of the former season, and the steadfast, abiding rigours of the latter! The gardener had to contend with the several opposed contingencies of these two seasons; he felt, and suffered by, the damp, the gloom, and unnatural mildness of 1845—6, succeeded as they were by myriads of insect marauders; and independent of these perplexing results—strange as it may appear to the uninitiated—he found it more difficult to govern and regulate his machinery for producing heat than during the intensity of the late season, which did not finally terminate till the 6th of May. It is a fact established by experience, that any measured or weighed quantity of a combustible does not communicate so much heat to a dwelling, or forcing-house, during mild, gloomy weather, and a southerly wind, as in a diametrically opposite condition of the atmosphere. Yet philosophers tell us that the chemical modification of the air, as respects its constituent gases (oxygen and nitrogen), are everywhere and always the same; also that the oxygen is the sole exciting and supporting cause of combustion. The development of heat and light is one of the most profound mysteries of the universe; yet modern discoveries have paved the way for investigation, as we shall concisely endeavour to prove, after observing, as a leading fact, that the heat of the sun, when passing through glass into a plant-house, diffuses heat with *perfect equability*, whether its beams pass unobstructed through that transparent, refracting medium, or are softened by the intervention of some light screen. Our heating machinery, whatever be the material employed—operating by radiation—acts unequally; as thermometers suspended in various situations but too clearly evince, by the very different degrees of heat which they indicate. It therefore becomes the interest and duty of every one whose aim it is to expose errors, and to promote the science of Horticulture, to seize upon, and make known, any fact that bears the resemblance of truth. Thus, in reference to the sun, a modern lecturer has said—" We commonly consider the solar beam as *Light*—in other words, that it consists only of that principle or power to which all luminous phenomena are due. Science, however, teaches us that the sunbeam consists of several principles, or is possessed of powers capable of producing several distinct phenomena. Vision and colour, calorific action, chemical change, molecular disturbance, phosphorescent excitation, and electrical phenomena, in their strange duality; and possibly, many of the more occult forces which so mysteriously regulate the vital functions of plants and animals, are to be sought for in the same source."

These and similar data are now announced as new; yet, if our memory and means of reference do not deceive us, a then nameless author, commenting upon one of the most striking conjectures ever hazarded by such a man as the late Professor Playfair, ventured, in the year 1830, to offer the following suggestions as a THEORY OF LIGHT:—"After mature reflection, I am inclined to define solar light as a material fluid, in its nature the most subtile, penetrating, and energetic—the source of all the phenomena of Heat, Electricity, and Magnetism. In all probability, light itself is in its nature subject to decomposition; it at least exerts an inductive energy, by which it effects astonishing electro-chemical changes." Previously he had said, "When other facts," (referring to the theory of coloured rays,) "are carefully investigated, I think it will be found more safe to conclude that the sun's rays contain a certain *principle*, by the operation of which colours are produced and developed, than that the white light which comes from the sun, or from any other luminous body, is actually composed and made up of seven different kinds of light of different colours, and of such only. Magnetic powers are communicated to needles and small particles of steel, by the blue rays. The close analogy which may be traced between electricity and magnetism, might almost warrant the conjecture that light and magnetism, when under certain modifications within the earth's surface, constitute electric or elementary fire, were it not for two considerations:—First, that magnetism is produced when concentrated electricity passes through space; and then its sphere of action is at right angles to the course of the electricity: thus, a bar of steel placed transversely over a wire, conveying an electric shock, becomes a magnet:—Second, that magnetism exerts its energy on iron, nickel, and some other metallic substances."

In endeavouring to prove that the sun is the great natural source of all the vitalising agencies, the author of *The Domestic Gardeners' Manual* adduced many—*then*—hypothetical suggestions, which modern discoveries appear to have substantiated. Thus the principles of light and heat have been separated; and, therefore, if by the use of a pale-green glass, and a plate of alum, Melloni could obstruct nearly all the *heating* rays, while the same media permitted *light* to pass with freedom, we should not be surprised if, by the operation of glass surfaces, talc, (mica), &c., modified and coloured, as casual discoveries may dictate, the solar power will be, eventually, so regulated as greatly to improve the action of glazed roofs.

The existence of two principles seems therefore to be established; what then shall we say of a third—*Magnetism?* Can we doubt its identity when we are certified of the earth's magnetic power? And here another suggestion presents itself.—Is not *cold* a substantive essence—a positive entity—and not the mere absence of heat? Why may it not be referred to magnetism, since the magnetic poles are, beyond doubt, referable to the coldest and most frozen regions of the globe? Again, as a fourth, we recognise the chemical principle to which so much importance is now attached that the term *actinism* has been applied to it, while its effects and the study of it have been distinctively called *actino-chemistry*.

This curious principle is described in Mr. Robert Hunt's "Treatise on the Physical Powers of the Universe," as "one of the greatest powers of creation." Nearly all, if not all, the phenomena of change, which have been referred to light, are now proved to be actinic powers; and beyond the influence which is exerted by it upon all inorganic bodies, that of the solar beams on vegetation is proved by common experience. Other principles—called, by Sir John Herschel, Parathermic rays—are here alluded to: "they act partly as light, and partly as heat, yet with distinguishing difference."

It is always wise to recur to authorities where any difficult subject requires discussion: the progress of science is slow, men oppose each other through a spirit of pure opposition, which not merely obstructs, but actually falsifies their own minds. Heretofore, since the discoveries of Dr. Black, the doctrine of latent heat has been pertinaciously maintained. Now, however, we begin to admit that heat, light, electricity, magnetism, and chemical power, are just so many substantive emanations from the sun. *He* then, the *Fountain of Light*, radiates, or transmits these vitalising elements to the earth, which thus becomes the great elaborating medium, wherein all the operations that terminate in meteorological phenomena are performed. Subject to these considerations, what are the principles which should be adopted in the construction of our forcing-houses? If, as has been said, solar power produces equability of heat, should it not be the aim of the forcing gardener to adopt a method by which any erection that occasionally or generally requires artificial excitement, can be heated throughout its entire area with all attainable regularity?

Yet, whether we consider the old fire-flue, the complicated steam apparatus, the hot-water pipes, channels, and tanks, the same results present themselves; for irregularity of temperature, even to the amount of many degrees, is discovered in all of them.

In a twenty-four feet house, attempted to be warmed as a vinery by a double course of hot-water channels, made of twelve-inch square paving-tiles cemented, that passed on every side of the erection, the air could never be regularly heated; its temperature varied fully five degrees, and even then the utmost power of a furnace which consumed two bushels of coke in twenty-four hours, could not insure 65° at the entrance of the "flow" water, during a severe frost, thus rendering it difficult to obtain more than 59° at the distance of twelve feet from that entrance.

We lately described a house which, by the heating power of a chamber acting upon air circulating within it and throughout the area of the building, became very effectively warmed. Subsequently, an opportunity has occurred to examine another erection constructed upon still better principles. This shall not be lost sight of, but in the meantime, while waiting for positive and conclusive evidence of facts, it will not be unprofitable to appeal to sound theoretic principles.

1. It is a maxim, or law of physiological chemistry, as applied to aërial fluids, that each gas becomes a vacuum to every other gas: thus, if a vessel contain hydrogen, the lightest of all bodies that are known to possess weight, and a quantity of common air, nitrogen, or oxygen be let into that vessel, the gas or gases so introduced will pass interstitially through the particles of the hydrogen, without chemically uniting therewith, or requiring any additional space. We are indebted to the late Dr. Dalton for this most interesting discovery.

2. *Radiation* is that species of action by which heated bodies communicate heat to other bodies, or rather to air interposed between them; the power diminishes in geometric progression, according to distance. If a surface radiate heat, the intensity of that heat will be equal at equal distances, but it decreases, in *inverse* proportion, at unequal distances. How very irregular, therefore, must be the action of all our present radiating surfaces. A flue, for instance, shall be almost red-hot at its entrance—six feet from that point its surface may not sustain 150°—and at the opposite end of the house, the hand shall scarcely detect any sensible warmth. Now, as heat diminishes in inverse progression—if, at two feet, the radiated particles raise the mercury of a sensible thermometer 40°, the same instrument, remaining exactly opposite the same part of the flue, but at four feet instead of two feet distance from it, will indicate an increase of 20° only—*i. e.*, as 2 : 40 : : 4 : 20. But when the whole surface loses heat at every foot of its course, how infinitely complicated must be the sum of its radiating power. We stand in need of improvement; and fortunate it is that the prospect brightens, and promises not to be delusive.—More of this at an early opportunity.

Equability of heat is rendered more desirable by the accidents, which formerly were of frequent occurrence, with the old fire-flues; these, of course, have ceased where hot water has been substituted; but some years since, a parcel of damp moss was laid on a flue near its entrance, nothing was apprehended, but in the morning, a strong, fœtid, ammoniacal odour was detected, and on opening the house the moss was seen reduced to ash; while vine and other leaves, at the remote end of the house, were completely decomposed and shrivelled, though no heat had approached. An apparatus, to produce healthful warmth, must affect the air and the air only, and operate by means of its interstitial diffusibility.

RANDOM RECOLLECTIONS OF WINTER-BLOOMING PLANTS.

In the gaiety of summer, when all the plants around are blooming in the most splendid manner, we are liable to forget that duller days will come, and hence too frequently neglect to prepare to cheat the "Ice King" of some of his terrors, by assembling under glass such an array of floral beauty as in the dull months of winter would almost lead one to exclaim "'tis spring! 'tis spring!" The operations of gardening are all based upon forethought, and the gardener who, in his every-day occupations, cannot see from twelve to eighteen months in prospective, does not deserve to be considered a gardener at all. Hence, then, the importance of forethought, and hence, also, the indispensability of following up the thought by action, so as to keep the machine regularly and systematically moving, and also to have a supply of whatever may be required at all seasons.

Now nothing is more easy than to have a conservatory gay with flowers throughout the winter, provided due preparation be made; but it is of no use to begin to prepare in October, as by that time the plants should be grown and set with bloom, so as to be ready to unfold their charms almost at a day's notice. To effect this, then, with some of the most showy, but at the same time common and easily managed plants, is the object of the following remarks, which are addressed more to amateurs than practical men, but which at the same time many of the latter may profit by if they feel so disposed.

Scarlet Pelargoniums.—Although most people are partial to this gaudy tribe of plants, it is strange that few think of growing them for winter flowering; and yet, when properly prepared, I know no tribe which will more amply repay the attention bestowed upon it. The proper method of procedure is this; in spring, before the flower-garden plants are bedded out, make choice of three or four plants of each of the following kinds:—Frogmore and Frogmore Improved, Cooper's, General Tom Thumb, Prizefighter, Shrublands, Count, Compactum, and others of the free-blooming kinds, and pot them into rather light porous soil, giving them a liberal shift, and place them in a free, open situation, where they will be fully exposed to the sun. Supply them liberally with water, applying liquid manure twice or thrice a week, and endeavour, by proper exposure to light and air, to induce them to make strong, short, stubby growth, in which, by the timely removal of the flower-stems wherever they appear, a quantity of fruitful or flower-producing sap may be deposited, which can be brought into action at any time when flowers may be required. To facilitate the maturing process, take the plants about the first week in August, and place them under a south or west wall, and let them remain there until the middle of September, taking care to prevent their rooting through the pots into the border, and at the same time using every endeavour to get the young growth thoroughly ripened. This treatment will probably make some of the leaves look rather yellow; but that is of little consequence, as a removal into larger pots, with some fresh soil, and a few weeks' protection under glass, will quickly bring them all right again.

Plants thus treated, may be considered as safely set with bloom as any bulbous flowering plant, and a plant or two of each kind introduced into a temperature of from 50° to 55° about every six weeks, will keep up a regular supply of flowers, from November until May. After they have done blooming in the forcing-houses, if planted out in May or June, they make beautiful specimens for the lawn or flower garden. For the same purpose, also, a few of the best of the variegated kinds should be grown into neat specimens, as, apart from the flowers, their variegated foliage will make a house look gay in winter.

Epiphyllum truncatum.—This is a well-known and very admirable winter-blooming plant, and when grafted on the *Pereskia*, or strong-growing *Cereus speciosissimus*, it makes a large and very magnificent plant. It also strikes very freely by cuttings of the ripe wood; and neat plants in thumb pots, producing from six to a dozen flowers at a time, are very useful and interesting decorations for the drawing-room. One of the most interesting groups of small plants we ever saw was placed upon a lady's drawing-room table on Christmas eve, and consisted of our present subject, with the Cloth of Gold and common white and blue Crocuses, red and white Fairy Roses, Van Thol Tulips, and Portulacca Thellusonii, all grown in small pots, and so arranged and covered with moss as to hide the pots, and form a remarkably neat group of miniature plants.

To return, however, to our subject, the Epiphyllums may be grafted at any time between Christmas and midsummer, and the only care necessary is to make an incision in the stock, force the graft tightly in, and fasten it with a small peg or a thorn from white-thorn. A little moss may be tied round the graft if the atmosphere of the house is dry, but not otherwise. If large specimens of this kind are desired, every branch of a strong plant of *Cereus speciosissimus* may be grafted at about six inches apart, and in this manner immense plants may be produced in a very short time. In grafting it on the *Pereskia* it is only requisite to stick the grafts on a young growing spine, and they will grow admirably.

In growing the *Epiphyllums* it is necessary to treat them rather liberally, giving a brisk growing temperature of from 60° to 75°, with plenty of rich manure water; but after the growth is completed the plants must be gradually hardened off, so that by the beginning of August they can be placed under a south wall in the open air, where they will mature the wood and set their bloom. After the bloom is set, water must be gradually withheld, and the plants must be kept in the greenhouse until it is wished to start them for bloom. *E. Russelliana* and *violaceum* are not less interesting than *E. truncatum;* indeed, where all are beautiful, I am not quite certain that *E. violaceum* is not the most charming. For spring forcing, all the *Epiphyllums* are very beautiful and easily managed, such as *E. speciosum*, *Ackermannii*, *Jenkinsonii*, *Conway's Giant*, &c., and the same treatment is applicable to all, viz., an early and thoroughly matured growth, and gradual drying off afterwards.

Begonia coccinea.—This is a magnificent plant, blooming profusely, either as a large or a small plant, and continuing for a very long time in perfection. It is readily propagated by cuttings in a gentle bottom-heat, at any time, and plants struck in the spring or summer make beautiful specimens for blooming through the following winter. All the Begonias grow freely in any free open soil, but a mixture, consisting of turfy-loam, leaf-mould, and peat, in about equal proportions, with plenty of coarse sand, is the best for them. In potting, observe to elevate the ball a little in the centre of the pot, as water, in a stagnant state, about the collar of the plant is very injurious. For decorative purposes, neat plants, in 24 or 16-sized pots, are the most serviceable; and cuttings rooted in the spring, and grown gently on through the summer, make plants of this description without much trouble. These plants if grown through a second season make magnificent specimens, if they are shortened in a little at the time of starting them, and are kept in a forcing-house until they get well established. *B. incarnata*, with its delicate pink flowers, on a bush three or four feet in diameter, is scarcely less beautiful than *B. coccinea*; *B. manicata* is singular and deserving of cultivation, as are also *B. fuchsioides*, *alba-coccinea*, *odorata*, and *hydrocotilifolia*. *B. atrosanguinea* and *zebrina* are also remarkable for their foliage. The *Begonias* require a temperature of from 50° to 65° to bloom them well, but once open, the flowers will stand for a long time in a temperature of 45° without injury.

Euphorbia jacquiniflora.—Who is there who does not admire this splendid plant? With its wreath-like branches of bright orange-scarlet flowers it is certainly one of the finest plants in cultivation, and claims a front place in every conservatory. It is readily propagated by cuttings of the ripened wood, in a brisk bottom-heat, and the cuttings, if stopped occasionally and kept growing in a forcing-house through the summer, make beautiful plants for blooming the first season. To ensure their blooming it is necessary that they be ripened off in the autumn, and for that purpose they should be removed into the greenhouse about the middle of August. They will bloom during the winter in a temperature of from 50° to 60°, and after they get shabby they may be set aside, and kept almost without water, until it is time to start them the following season. In starting, prune them in to within two or three buds of the old wood, and after giving the soil a good soaking of water, lay the pots on their sides in a brisk heat, until the shoots are an inch or so long, as this, by equalising the distribution of the sap, will cause many buds to break which otherwise might remain dormant. When the shoots are about an inch long reduce the balls and re-pot into smaller pots, using the same compost as for the Begonias, and plunge the pots in a brisk growing-heat of 65° to 75°. In such a situation they will soon make progress, and by proper attention will form plants five or six feet high, and proportionately bushy, by the autumn. *Euphorbia splendens* also makes a fine plant for spring forcing, but if required very early should be forced to make an early growth in the preceding season.

Poinsettia pulcherrima.—This, with its magnificent scarlet bractæa, is a splendid plant, and a fit companion for the Euphorbias. It requires nearly the same treatment, with the exception that it must not be stopped quite so frequently, but rather be allowed to run at random. The flower is almost insignificant, but when vigorously grown, the bracts or floral leaves both of this and *P. pulcherrima alba*, the white variety, are remarkably beautiful.

Poinciana pulcherrima.—Writing of Poinsettia brings to mind this splendid stove plant, which is hard-wooded, and belongs to the natural order Leguminosæ. It is a free-growing plant, producing bright purple-scarlet, bottle-brush-like flowers, on small branches from the old wood, so that the plant requires to be grown a season or two before it blooms much; but if it is grown vigorously through the summer, and, after the wood is ripe, allowed to go to rest, and pruned closely in, and started about Christmas, it will form a magnificent plant in February and March.

Tropæolum Lobbianus.—This is one of Messrs. Veitch's acquisitions through their collector, Mr. Lobb, and is an invaluable plant for winter blooming, producing bright orange-scarlet flowers very profusely, and quite as bright in colour as the scarlet geranium. It is readily propagated by cuttings, and will grow in any common soil. To bloom it properly, it requires during the winter a temperature of from 50° to 55°.

Cestrum aurantiacum.—A comparatively new plant, producing bright orange flowers in November and December, succeeded by fruit which is almost as interesting as the flowers, though very dangerous, being a deadly poison. It is readily propagated by cuttings, in spring, and the plants require to be grown vigorously through the summer, and gradually hardened off for blooming towards the autumn. In the second season it merely wants to be cut in and started in the spring, giving it plenty of pot-room, and occasionally stopping the strong growths as the plants progress in size. It will bloom in a cool greenhouse.

Eranthemum pulchellum.—This is an old plant, but a very fine one for winter blooming, and is also very easily managed. Cuttings struck in the spring, occasionally stopped so as to make them branch, and grown in a forcing-house through the summer, make admirable winter-blooming plants, and the best of these kept through a second season, and properly managed, make magnificent specimens. The Eranthemums will grow in almost any soil, and, so long as they have heat and moisture, and are kept clear from insects, will scarcely go wrong. *E. bicolor* is also a fine spring-flowering plant.

Linum trigynum.—Contrasting with the bright purple flowers of the preceding plant, this is a very useful and easily-managed plant, striking root readily in any common soil in heat, and growing with the greatest possible freedom. It produces bright yellow flowers, and a few plants introduced into heat about once a month during the winter will give a regular succession of bloom. The only objection to the plant is the affection which the red spider has for it; but if kept vigorously growing and copiously syringed, these pests may be kept under.

Justicia speciosa.—An old, but desirable plant, producing purple flowers, and requiring the same treatment as the Eranthemums. *J. coccinea* is also a very lovely plant, probably the finest of the tribe, not so much cultivated as its merit entitles it to be.

Ruellia macrophylla.—The plant figured at page 29 of the present volume is also a very superior stove plant, blooming through the winter with great freedom; and the old *R. formosa*, with its bright scarlet flowers, is also a good plant for our present purpose.

Pentas carnea.—A few good plants of this should always be grown in the stove through the winter, as they produce a profusion of flowers, which are very acceptable for *bouquets*. The plant is too easily managed to need a remark.

Gesnera zebrina.—This and *G. elongata* are two admirable plants for winter: the former, like the *Achimenes picta*, which must be classed with it, is propagated by the division of the grub-like tubers, and these, for winter-blooming, must be started about July, and kept vigorously growing. They are remarkably handsome plants both in flower and foliage. *G. elongata* is propagated by cuttings, which strike readily in heat, and, to make fine plants, require to be grown vigorously through the preceding season.

Manettia bicolor.—A free-growing stove climber, striking with great freedom, and, if properly encouraged, covering a large trellis in a very short time. It is a stove plant, but, to ensure its blooming, it is advisable to ripen off in the greenhouse towards the autumn.

Cinerarias.—These are indispensable plants for winter decoration, and of themselves will form a very good show. Everybody knows they may be propagated by seeds, by cuttings, and by division of the plants; but the most simple way of managing them is this:—in June, after they have done blooming, prepare a piece of light rich ground in the open garden, and having reduced the ball, plant them out at about eighteen inches apart, and supply them liberally with water whenever they require it. Here they will grow vigorously, so that by the end of August they will be fit to take up and part. At this time the strongest plants must be potted into small pots, in a compost consisting of light loam, leaf-mould, and sand, with which a little soot may be intermixed, and afterwards placed in a close cold frame, and shaded until they make root; but the smaller plants may be pricked out in the open ground at about nine inches apart, where they may remain until October. The first lot will be in bloom in November, and the second will give a succession until the following May. If fine specimens are wanted, they must be liberally treated, both at the root and branch, by giving plenty of pot-room, and supplying them liberally with manure water, and by maintaining at all times a kindly moist atmosphere.

In addition to the preceding plants, *Fuchsia serratifolia* is also a fine winter-flowering plant, and with a good stock of the double and single Chinese Primulas, some Heaths, and plenty of Tree and Neapolitan Violets, some Mignonette, and forced Roses and Bulbs, a first-rate display may be kept up from Michaelmas until May-day.

ON PRUNING AND TRAINING.

In a paper, headed as above, a year ago, we directed attention to what might be effected by pruning and training, if those operations were rightly done, so as to develope what they are capable of accomplishing. We now cursorily return to the subject, and desire to fix the attention of our readers, by instancing a genus or two of shrubs, or trees, which are so eminently benefited by judicious and well directed pruning and training.

That the spring and summer, or the growing season, is the most suitable, as well as most pleasant time, for the purpose, there can be no dispute. Amateurs, and persons whose acquaintance with the strength and enduring nature of the growing principle of plants, during spring and summer, is limited, may form a good idea on the subject, by cutting in, severely, any woody plant, and rubbing off all the new shoots as they are produced; the pertinacity with which fresh ones will continue to be put forth, until late in the autumn, is a convincing proof that the force which induces them to continue so repeatedly springing is no small one, and *that* force is, in a great measure, subject to the pruner and trainer.

Greenhouse Azaleas, probably of all plants, if properly treated in other respects, exhibit the gratifying effects of tasteful and good training. In the case of plants cultivated in pots or tubs, when success has attended the endeavours to produce specimens of good shape, its invaluable aid is strikingly conspicuous; and not less evident is the neglect of training in these kinds of plants.

Azaleas are not very easily trained to any form we may wish them to take, but constant and persevering endeavours will accomplish very much. The plants should be commenced with whilst young, and if attended to regularly, until the foundation of the desired shape is satisfactorily established, the after-training becomes easy and natural. Stopping, or pinching off the ends of the growing shoots, and disposing and securing the main ones, which must often be done with a sacrifice of the flowers, are amongst the principal points in training and pruning greenhouse Azaleas.

Tender Rhododendrons are less difficult to manage; their beauties, however, are wonderfully enhanced by an uniform disposal of their branches whilst young, and the effects of such treatment is very apparent, especially in the fine kinds, when grown to a large size.

What has been said of Azaleas and Rhododendrons, which require the shelter of the greenhouse, and are generally confined to pots or tubs, is quite applicable, as far as training is concerned, to the hardy species, especially to those of the former. The members of that genus are frequently planted in some of the most conspicuous parts of the pleasure ground and garden, either in groups or as single specimens; but they are often sadly deficient, as individual plants, of anything like an agreeable shape. This is a matter of regret, because a clump of hardy Azaleas, of different kinds, as well as isolated specimens, would be tenfold more beautiful if all the individuals which compose it were faultless as specimens. Planting at the time the plants are small, at a much greater distance from each other than is usually done, and a trifling attention to training, would be productive of a considerable advance in the right direction; but if they are to be made thoroughly handsome bushes, full attention must be paid to pruning and training.

Hardy Rhododendrons, Kalmias, and all allied genera, may be included in the above observations, for although they frequently of themselves grow to beautiful objects, yet there seldom occurs an instance of a specimen in which the above attention would not have wrought some decided improvement.

ON FLOWERING THE CAMELLIA IN WINTER.

An observation or two on this subject, made at page 112 of vol. xiii., attracted considerable attention, and would doubtless be all that the practical and experienced horticulturist required, if he was not already familiar with the fact, that Camellias may be had in bloom two-thirds of the year. Sufficient was there said to enable those classes of individuals to adopt measures that would lead to the accomplishment of their wishes. Amateurs, however, and many others, who take an active interest in gardening pursuits, but have too little leisure to bestow that attention to the details of practice, may require a fuller explanation. The following few remarks are intended to supply the deficiency.

Young plants of the Camellia, in which it is desirable to induce an early flowering habit, should be very gently forced into bloom, and ought not at the commencement of the process to be compelled to develope their blossoms more than a fortnight earlier than they have been wont. The first attempt at forcing, in the hands of inexperienced persons, will probably be a failure, but, notwithstanding this, the plants with which the experiment has been tried must not be abandoned. We style the process *forcing*, because in the outset compulsion is necessary, but afterwards force is altogether abandoned. If the first effort to procure early Camellia blooms should fail, either the management has not been right, or the plants are not in good health and vigour. Whatever may have been the cause, let the plants have their regular seasonal treatment, as though they had bloomed ever so well. They should be induced to make as strong and as early a growth as possible, and that growth ought to be quickly matured.

Considerable progress will have been made the first season if proper attention has been directed to the points mentioned. The second year a similar course should be taken, only a greater degree of earliness should be aimed at; and likewise the third year, which will be sufficient to establish the early blooming habit. October may generally be considered the commencement of the early blooming season.

It is quite unnecessary to say anything on the desirableness, of having Camellia blooms enjoyed, for so long a period as from the beginning of October, to as late in spring as their development can be retarded. It only remains for us to add, that everything approaching a sudden change of condition in the management must be scrupulously avoided.

REVIEW.

THE ROSE-GARDEN.—By William Paul, of the Nurseries, Cheshunt. In twelve monthly Parts. Illustrated with coloured plates and woodcuts. *Sherwood & Co.*

FEW persons in England are better qualified to prepare a work of this description than Mr. Paul. It is true, treatises on the Rose have now become numerous, and some of them are excellent, having been written by persons of known capabilities and experience; the subject, therefore, might almost be considered exhausted: this, however, is far from being the case; every time it is re-examined, something new presents itself; facts which were omitted in all previously written works, become known; and hints of much value on particular points of cultivation are placed before the public.

Much of what will be found in the "Rose Garden," is from the personal experience and observation of the author. On this account we can safely recommend it; we feel satisfied its details may be depended upon, and its directions will ensure success. It is formed into two divisions:—the FIRST comprises the History of the Rose; the Formation of the Rosarium, and Rose Clumps in general; Remarks on Locality, Soils, the Improvement of Soils, &c.; On Pruning; Hybridizing; Raising of Seedlings; Culture of Roses in Pots; Forcing; Budding; Grafting; Exhibiting; and various other operations and amusements connected with the culture of Roses. The SECOND division contains an arrangement of all the approved Roses known; their colours, size, form, degree of fulness, habit, and rate of growth, which points have been noted chiefly from specimens when in flower. In addition to this, any peculiar methods necessary to be observed in the cultivation of particular groups, will be recorded, and the purposes for which each group is best suited; as, for example, whether for Standards, Dwarfs, or Climbers; for Forcing or Pot-Culture. A portion of both Divisions of the work are to appear in each Part.

Each Part consists of twenty-four pages of letter-press, illustrated with one or two highly-finished coloured plates of new and first-rate kinds of Roses, with occasional woodcuts to illustrate the practices of Rose culture. And at the end of the work it is intended to form an appendix, to contain some of the more interesting and important opinions of cultivators.

That some idea may be formed of the matter, it might be right to give a specimen. All the Roses in cultivation are divided by Mr. Paul into two classes—*Summer* and *Autumn* Roses. The *first* contains twenty-one groups or families; and the *second* seventeen, making altogether thirty-eight groups.

CLASS I.—SUMMER ROSES,

BLOOMING IN MAY, JUNE, AND JULY.

Group 1.—The Alpine or Boursault Rose.

The Boursault Roses are very distinct from all others. The shoots are long, flexible, very smooth, in some instances entirely free from thorns; the one side often of a pale green, the other of a reddish tinge; the eyes are formed further apart than in common. The flowers are produced in large clusters. By these features are the varieties of this group readily distinguished. The Boursault Roses, though of vigorous growth, are not of a sufficiently pendulous habit to make perfect "*Weeping Roses*" without assistance from the cultivator. When desired to be formed into such, the branches should be drawn to the ground with tar-twine or twisted bast, when the immense trusses of flowers they bring forth give to the tree an appearance truly gorgeous. One inducement to grow them in this manner is, that as most Roses of a pendulous growth produce pale-coloured flowers, they introduce a charming variety among *Weeping Roses;* for the Boursault are mostly crimson or purple.

Besides forming good Weeping Roses, they are fine grown either on pillars or on fences with a northerly aspect, a situation where few other kinds succeed well. It might be supposed that they are very hardy, growing naturally, as they do, on the Alps of Austria and Switzerland. And such indeed is the case; they will bloom well in situations where they scarcely obtain a gleam of sunshine. The popular name of the group *Boursault*, is due to the first double Alpine rose being so named in compliment to M. Boursault, a French cultivator. The Blush and the Crimson have been recommended by many as stocks for budding and grafting the Tea-Scented Roses on. The Blush has been used here (Cheshunt), but is not approved of; it is the worst of all stocks, and more disposed to canker than any other with which we are acquainted. The Crimson, which appears more suitable for the purpose, has not been tried extensively. I believe, however, *for general use*, no stock can be found better than the Dog-Rose; certainly none can be hardier.

For pot Roses, however, there are others which, for one reason, seem to offer advantages; they produce a greater quantity of fibrous roots in a smaller compass than the Dog-Rose; a point of importance when a plant is confined for space. Of such nature are the Boursaults and the Manettia Rose. But when a plant is not confined for space, when the roots can dive into the free earth in search of food, then I would prefer the Dog-Rose to any other.

Boursault Roses should be well thinned out in pruning; but the shoots that are left for flowering should be shortened in very little.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR JUNE, &c.

Acacia celastrifolia. If a gracefully formed, much branching, evergreen shrub, with rather dense and broadish, bright glaucous-green leaves, whose ultimate branches are literally bowed down with the abundance of yellow heads of highly fragrant flowers for nearly two months of the year, and those almost of the winter season, can have any claim to cultivation, then may *Acacia celastrifolia* be confidently recommended. It was raised from Swan River seeds collected by Mr. Drummond. In odour it a good deal resembles that of the whitethorn, but is more delicate. Although very different, it will rank near *A. myrtifolia.*—*Bot. Mag.*, 4306.

Aconitum autumnale. Received from Mr. Fortune, who found it in the gardens of Ningpo, in the north of China. It is prized there, chiefly on account of its habit of blooming late in the autumn or winter. As it will certainly prove quite hardy, and retain its habit of flowering in the winter, it will possess some interest to the collectors of new hardy herbaceous plants. In its manner of growth this Aconite resembles *A. Napellus;* in the form of its flowers, *A. Cammarum.* It grows about three feet high, and produces its flowers, which are lilac and white, in a simple spike, which, however, in time becomes a panicle, by that retrograde development which seems common to all Aconites. The smell of the blossoms is heavy and unpleasant.—*Hort. Jour.*, vol. ii., 77.

Berberis ilicifolia. Of this rare and beautiful *Berberry*, hitherto known only to the hardy adventurer on the coasts of Fuegia, beyond the Straits of Magalhaens, living plants were sent home by the officers of the Antarctic voyage, under Captain Sir James Ross, to the Royal Gardens, with other treasures of those Antarctic regions. So much did they suffer during their perilous voyage, that, of the Berberis, only one could be successfully reared, and that has now produced its deep orange-coloured blossoms, which, taken in conjunction with its bright, glossy, holly-leaved foliage, renders it one of the handsomest known species of the genus. The berries are of a deep steel-blue colour, and remarkable for their gourd shaped form. *Bot. Mag*, 4308.

Chænostoma polyanthum. A small suffruticose half-hardy plant, of very pretty appearance, requiring the same treatment as Verbenas, and, like them, well suited for bedding out in summer.

It is easily increased either by seeds or cuttings, grows freely in any rich garden soil, and flowers abundantly from July to September. The flowers are orange and pale purple. It requires the protection of the greenhouse during the winter.—*Bot. Reg.*, 32.

CLEISOSTOMA SPICATUM. A Borneo plant, exhibited by Messrs. Rollissons, at the last meeting of the Horticultural Society. The leaves are large and broad, the flowers red and yellow, in short oblong spikes.—*Bot. Reg.*, 32.

COLLANIA DULCIS. Said to be a native of Huallay, near Pasco, in Peru, at a height of from twelve or fourteen thousand feet above the sea, and to be called by the country people *Campanillas coloradas*. The stems grow about a foot high, and the purple and green flowers are produced at the termination. If kept in the greenhouse nearly dry after its stalks decay, it will shoot again in April, and after standing out of doors, plunged in a sand bed, during the summer, it flowers in October or as late as December.—*Bot. Reg.*, 34.

EPIDENDRUM PLICATUM. This fine species has been introduced from Cuba, by Messrs. Loddiges, with whom it flowered last January. It is remarkable for the petals, which are green inside, with a few purplish stains near the point, being of a deep rich violet on the outside. The sepals are greenish, stained with dull purple on both sides. The lip is of a very rich purple.—*Bot. Reg.*, 35.

GARDENIA MALLEIFERA. Sir William Hooker's first knowledge of this fine plant, with its large, white, fragrant flowers (not unlike the odour of primroses), and extraordinarily large and clapper-shaped stigma, so large and so heavy, that it rests, as it were, on the lower side of the flower, was from dried specimens sent by Miss Turner, daughter of the then Governor of Sierra Leone. The introduction of living specimens is due to Mr. Whitfield, who collected for the Right Hon. the Earl of Derby, to whose stoves at Knowsley, this and many other plants of rare beauty were introduced in 1843. This species loves heat and moisture, and, planted in a good sized pot, with a mixture of heath-mould and loam, makes rapid progress, and begins to flower when only two or three feet high. It would seem in its native country to form a large shrub.—*Bot. Mag.*, 4307.

HENFREYA SCANDENS. The climbing habit of this plant is an unusual feature in the order to which it belongs, probably nearly related to Thonning's *Ruellia quaterna*, another West African climbing plant, with white flowers. This species seems to be common at Sierra Leone; it was found there by Mr. George Don, and also by Mr. Whitfield, the latter of whom introduced it in a living state. Amongst the numerous plants of climbing habit which adorn our stoves, *Henfreya scandens* is assuredly a subject deserving our notice. Under the most liberal and satisfactory cultivation, it never ranges beyond proper limits. Its foliage is not subject to injury, being also dark green, coriaceous, and permanent, contrasting admirably with the delicate, white, Petunia-like flowers, which are produced in the utmost abundance in racemes, at the angle of every leaf, continuing to throw out a succession of bloom for several months.—*Bot. Reg.*, 31.

IPOMŒA PULCHELLA. A very handsome stove Bindweed, which flowered with Mrs. Sherborne, near Prescott, Lancashire, the seeds having been received by that lady from Ceylon. It is identical with *C. heptaphyllus* of Roxburgh, and *C. bellus* of *Spr. Syst. Veget.*—*Bot. Mag.*, 4305.

MEGACLINIUM VELUTINUM.—An Orchidaceous plant, nearly related to *M. falcatum*, from which its lateral sepals, velvety inside, distinguish it. The flowers are deep purple, as well as rachis, except the upper sepals and petals, which are dull yellow. Messrs. Loddiges imported it from Cape Coast Castle.—*Bot. Reg.*, 32.

SOLANUM JASMINOIDES. This very pretty climbing plant seems to vary in the colour of its flowers. When we figured it in the *Mag. Bot.*, vol. viii. to v., the specimen from which our drawing was made, produced in a Camellia-house, was pale blue; in the Garden of the Horticultural Society, where it is trained against a south wall in the open air, its flowers are nearly white; in both states it is a great ornament.—*Bot. Reg.*, 33.

THIBAUDIA PULCHERRIMA. Imagine a branch four feet and a half long, dividing only at the top in from four to six rather short, leafy ramuli; the leaves evergreen, six to eight inches long; the old, long, and woody portion of the stem throwing out, on one side, numerous crowded clusters, or drooping sessile umbels, of from twelve to twenty blossoms in each umbel, and in all states of progress, from the early buds, when they, as well as the pedicels, are scarlet, variegated with pale but bright green, to the fully expanded corollas, an inch long, narrowly campanulate, of an ochraceous red, veined and chequered (something like the flower of the *Fritillaria Melagris*) with deeper and brighter lines of red. The inner structure of the flower, too, is very curious, the stamens forming a close column around the style, and the anther tubes of very great length. It is a native of the north of India. Relative to its culture, Messrs. Lucombe and Pince, of Exeter, observe:—Planted against the wall of a Camellia-house, (which in winter is frequently within a degree of the freezing point,) in a border composed of heath-mould, loam, and sand, which being very well drained, admits of copious waterings during the growing or summer season, it thrives remarkably well, making vigorous shoots from three to four feet long in a year. The copious flowers appear on the *two year old wood*, and first begin to develope themselves about Christmas, expanding early in April.—*Bot. Mag.*, 4303.

Vanda cristata. This Orchid has not much beauty to recommend it; but the lip is large, and prettily striped and variegated with blood colour and yellow upon a velvety ground. It blooms at the latter end of winter and early in spring, enlivening the stove at that season with its variegated flowers. It inhabits trees in Nepal.—*Bot. Mag.*, 4304.

Vanda violacea. This is one of those charming epiphytes which are only procured in the fertile regions of the East. Mr. Cumming found it in Manilla, and introduced it to Europe. The flowers are in short pendulous racemes, rather large, with an ivory white ground spotted with light violet; of the latter colour there is one large blotch within the extremity of each sepal and petal, and a few small dots are scattered over their surface; the lip is wholly violet. The flowers have a faint and rather disagreeable smell, which is not, however, perceived till they are nearly approached.—*Bot. Reg.*, 30.

PLANTS NEW OR INTERESTING, IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES AND GARDENS.

Æschynanthus longiflorus. Messrs. Veitch have received the above-named species from Java; it is exceedingly attractive, with large clusters bearing from twelve to fifteen blooms of a brilliant scarlet and orange colour, each blossom about two inches and a half in length. The plant has very handsome foliage of a rich green, and will make a gay addition to our stoves. It is certainly the handsomest of the species.

Aerides spe. nov. A beautiful species has recently flowered in the collection of J. U. Schroeder, Esq., Stratford Green, differing in habit from *A. maculosum*, to which, however, it is nearly allied. The flowers are of a lovely rosy lilac, very rich, and produced in great abundance.

Cattleya spe. nov. In the collection of S. Rucker, Esq., Wandsworth, a very beautiful flower of this species has lately exhibited itself. The plant, from its habit, thought before flowering to be of the *Sophronitis* tribe, has proved to be a *Cattleya*, having the sepals and petals—though richer in colour—like *C. Skinnerii*, the labellum formed like *C. Aclandii*, and of a deep crimson violet hue. The plant was introduced from one of the continental nurseries, but of its native country we are ignorant.

Cyrtochilum spe. nov. A pretty and superior plant, the flowers with richly brown spotted sepals and petals, labellum broad and of a light purple colour. In habit it is much like *C. hastatum*, but that the scape is erect, and the bloom—although gayer—is not produced in such abundance. The specimen here noticed was in the collection of Mr. Hunt, gardener to Miss Traill, near Bromley, Kent.

Fuchsia spe. nov. A lovely and graceful plant, introduced by Messrs. Veitch from Peru, with petalless flowers, about three and a half inches long, of a rosy violet colour; at the division of the calyx it becomes a brilliant green; foliage small and handsome, and promises to bloom freely.

Gloxinia Fyfiana. An English hybrid variety of this interesting genus, differing very materially from all the varieties that have been produced, by sending its bloom erect from the root; the flowers are campanulated, all the petals regular in size, and forming a star-shaped flower: this is the more noticeable from its rich purple from the throat extending into every petal, and leaving a bold margin of white. The habit does not differ from the general appearance of the other varieties. It was in the collection of Messrs. Veitch at the last exhibition in the Gardens of the Horticultural Society, Chiswick.

Hydrangea japonica, *var.* A species differing in colour from the *H. japonica* we figured in No. 141 of our *Magazine*, being a reddish lilac in colour, the crest of bloom perhaps a little denser, and the habit of the plant less disposed to straggling, and more dwarf. It was in the collection Messrs. Veitch exhibited at the late Horticultural Exhibition in the Society's Gardens, Chiswick.

RHODODENDRON, *var.* At the nursery of Messrs. Standish and Noble several fine hardy hybrid varieties of this splendid genus have recently been in flower. Mr. S. has, after many years, succeeded in producing richly coloured flowers, and the plants bloom so late that they are not injured by the frost. One of the specimens, *R. Standishii*, has fine trusses of deep crimson, with a violet tint, well spotted on the upper petals. Another, *R. Nobleanum*, has handsome well-formed flowers of a bright rose, and has a broad stripe of pure white down the upper petal into the throat, and forms a good truss. The foliage of the various specimens is fine, broad, and of a rich green, very superior to any of the hardy varieties in cultivation.

ROSA ANEMONEFLORA. A curious three-leaved species, having clusters of small pale blush flowers; the outer petals, five in number, are broad, while the centre is filled with a mass of narrow petals, giving the bloom much the appearance of a double Anemone. It was introduced by Mr. Fortune, from China, and flowered for the first time in the nursery of Messrs. Standish and Noble, Bagshot.

SCUTELLARIA INCARNATA. Another of Messrs. Veitch's importations, very similar in habit to the varieties in cultivation, but having very bright rosy purple flowers, in form and growth like *S. coccinea.* This species will be a good addition to our collections, from its colour.

At the recent fêtes in the Royal Botanical Society's Garden, Regent's Park, and the Horticultural Society's Garden, Chiswick, we noticed the following specimens well-flowered and grown:—*Aerides odorata*, fine, with upwards of sixty spikes of bloom; the plant about four feet high, and same in diameter. *Saccolabium guttatum*, with nineteen spikes of bloom and equally fine specimen, were in the collection of Mr. Wray, gardener to J. J Blandy, Esq., Reading. Mr. Mylam, gardener to S. Rucker, Esq., Wandsworth, had a fine specimen of *Aerides odorata; Mormodes aromaticum*, with spikes of flowers eighteen inches long, which, though not fully expanded, were sufficient to shew the merit of cultivation; *Lælia majalis*, very fine lilac flower, with a richly spotted labellum; *Vanda teres*, fine specimen six feet high, with upwards of thirty flowers well developed; *Cymbidium pendulum*, with scape three feet long, flowers large, and well-coloured. *Aspasia lunata*, Messrs. Rollisson had this pretty species well flowered, and several varieties of *Stanhopea. Achimenes patens*, we saw a fine variety of this charming plant exhibited by Mr. Dobson, gardener to E. Beck, Esq., Isleworth. *Allamanda cathartica*, there were several fine specimens of this plant; the largest was in the collection of Mr. Carson, gardener to — Farmer, Esq., Nonsuch Park, Surrey. The flowers, however, were not so fine as a smaller specimen exhibited by Mr. Green, gardener to Lady Antrobus, Cheam Park: Mr. G. had also a handsome specimen of *Gompholobium splendens*, covered with pure, bright, yellow flowers, forming a very attractive plant. *Cattleya itrina*, Mr. Jack, gardener to G. Lorraine, Esq., Carshalton, had a well developed flower of this interesting little species, pale yellow, and labellum slightly deeper in colour. *Cattleya superba*, Mr. Warner's collection afforded an opportunity of seeing this very handsome species in good flower, as well as a fine specimen of *Oncidium citrosmum* in excellent condition. Mr. Jack had a very fine dark variety of *Stanhopea tigrina* in good flower. *Hindsia longiflora* and *H. longiflora alba*, Messrs. Henderson, of Wellington Road Nursery, had these plants, so difficult to cultivate, in good flower; and Messrs. Henderson of Pine-apple Place, had a very fine specimen about four feet high, in very good flower of *H. longiflora alba.* Mr. Lane, of Berkhampstead, exhibited a superb Moss Rose, the colour rich crimson, of excellent form, and the most delicious fragrance.

TROPÆOLUM SPECIOSUM. At the late fête in the Gardens of the Horticultural Society, Chiswick, Messrs. Veitch exhibited this remarkable and very handsome species in excellent flower; it belongs to the pentaphyllum section of these beautiful creepers, and has flowers an inch and a half in diameter, of a brilliant scarlet, that, added to a very neat foliage, will make this species one of the most deserving of extensive cultivation. The plant is quite new to our collections.

OPERATIONS FOR JULY.

At no period of the year probably is there so much business of a strictly routine character as in this month. If we notice the *Conservatory*, there it is necessary to repeat nearly the same operations every day. Watering, maintaining a clearance of dying and dead flowers, and training climbing and other plants which have a permanent position in the erection, are amongst the daily and chief business of the season. Many specimens here will doubtless be benefited by the application of liquid manure, but this must always be supplied with caution and judgment; weak solutions frequently repeated are always preferable, even in the cases of those plants which will admit of powerful stimulation, being a far safer mode of administering it than giving strong doses at once. All persons engaged in training climbers should bear in mind that upon their tasteful disposal at this time depends the charm and graceful beauty of their appearance hereafter. Most greenhouses and conservatories are more or less dependent for their summer display on such plants as *Fuchsias*, *Cinerarias*, and choice annuals; these therefore must have a due share of attention, and if possible not be allowed to bloom until they are required in the situations they are intended to occupy.

In the Orchid-house and stove, any plants whose growth is completed must be favoured with a lower temperature, more congenial to their condition, and so be gradually allowed to sink into a state of rest. A considerable diminution in the amount of shading, water, and other aids to growth which were required up to this period, may now take place. Of course this direction is not of universal application, because there are few collections indeed in which, at all seasons, some plants will not be in a growing state; such must continue to be favoured with those conditions which conduce to the development of their respective growths. Many of the finest Orchids bloom at this season, and must accordingly be well looked after, that their inflorescence sustain no injury before being fully developed.

Whatever greenhouse or any other plants are maturing their growth, they should be exposed to all the air that can be safely admitted to them. Greenhouse plants still vigorously growing may have their shoots shortened if it is desirable to have very bushy plants; cleanliness, too, is very important.

Cold pits, which can be closed with glazed lights, are very suitable erections for bringing forward a large class of small plants designed for the greenhouse. Most young seedlings of greenhouse plants or small soft-wooded species, as Fuchsias, Calceolarias, &c., and annuals also, fare much better in pits, or in a common frame, if they can be placed near the glass, and receive the proper atmosphere suitable for their prosperity; indeed, plants may remain in these simple structures until brought beautifully and perfectly into flower, quite fit to remove to the drawing-room, conservatory, or greenhouse.

Propagation by budding, layering, and cuttings must have its due share of attention in every department. In a general way there is seldom anything lost, but much gained by beginning to propagate early. Inexperienced hands and amateurs have a double advantage; by commencing as soon as circumstances will permit, they gain experience and have time to make repeated trials in case of failure.

Potting and repotting may still be carried on, but it will be well to have an eye to the progress of the season, and make root provision for plants accordingly.

Collecting seeds and taking up bulbs must not be neglected, the former especially, as many choice early flowering plants, and those from which new varieties are raised, ripen now. Piping of Pinks, layering Carnations and Picotees, must also now have proper attention. The flowers of the two latter should be well looked to, thinned, and properly tied up.

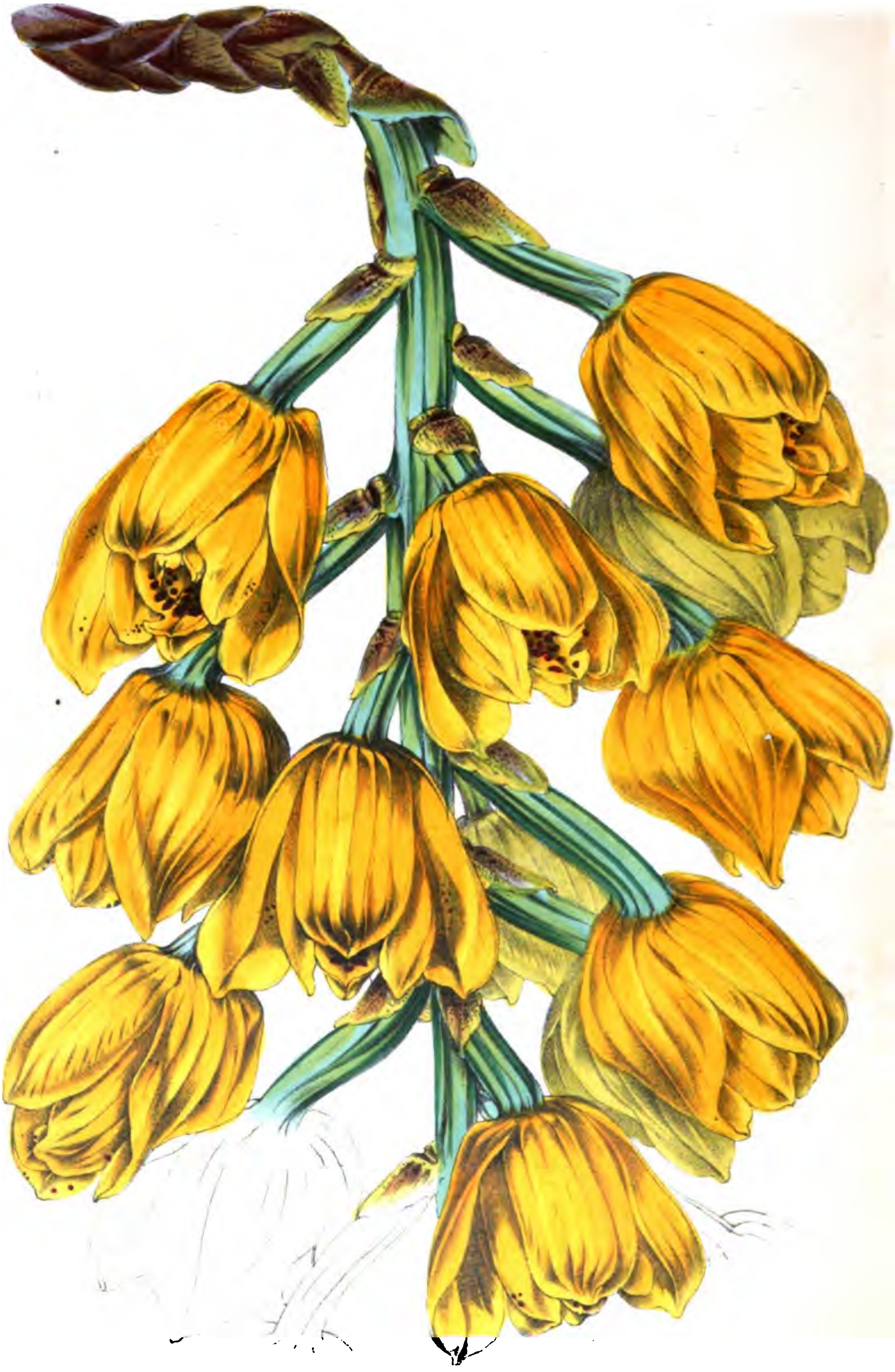
In the flower garden the main business is keeping everything in the best possible order. Flowering plants of all descriptions will require regularly tying to suitable supports, or otherwise securing, and a great amount of routine work which need not be specified will require constant attention.

DEATH OF THE DEAN OF MANCHESTER.

We deeply regret having this month to record the unexpected death of the Hon. and Rev. W. Herbert, Dean of Manchester, which took place suddenly at one o'clock on Friday, May 28th, at his house in Hereford Street, Park Lane, in the sixty-ninth year of his age. His health had been declining for the last two years, and latterly he had been obliged to have medical attendance. On the morning of his decease he appeared better than usual, and went out, but in about a quarter of an hour after his return home, he suddenly fell back in his chair, and expired almost immediately.

To Botany and Horticulture this highly talented and excellent gentleman was most ardently devoted. "To wonderful perseverance, untiring zeal, and much manual dexterity, he added a vigour of intellect and power of perception that have rarely been surpassed. None, except those who enjoyed the honour of his intimate acquaintance, can imagine the enthusiasm with which he prosecuted his favourite studies. The 'Botanical Magazine' and 'Register' received from him frequent communications. His greatest work in this line, the '*Amaryllidaceæ*,' accompanied with a treatise on hybrid intermixtures, was published in the year 1837. And such leisure as remained to him in the succeeding years of his connexion with a great manufacturing city, and of declining strength, was employed on the *Iridaceæ*. In this work, (which, had longer time or better health been granted to him, would have been as complete as the former,) a progress has been made which may probably be thought sufficient to render its publication acceptable to the naturalists of this and other countries. A foretaste of this work appeared in his '*Crocorum Synopsis*,' in the 'Miscellanea' to the 'Bot. Reg.' for 1843, 1844, and 1845.

"Mr. Herbert was, beyond all other persons, instrumental in establishing and rendering popular the botanical theory of hybridization among plants; as he was also among the earliest, and one of the most eminently successful, of those who applied it to Horticultural practice. Upon the phenomena of hybrid intermixture he mainly founded those conclusions at which he arrived concerning natural classification, and the doctrine of genus and species. They will be found embodied in an essay on *Hybridization amongst Vegetables*, which has been published in the Journal of the Horticultural Society; and which constitutes a rich mine of valuable facts and not less valuable reasoning."



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Acineta Barkeri

ACINÉTA BÁRKERI.

(Mr. Barker's Acineta.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

Generic Character.—*Perianth* fleshy, spreading. *Sepals* concave, joined at the base, hence forming a monophyllous calyx. *Petals* resembling the sepals, but rather smaller. *Lip* very fleshy, continued from the elongated base of the column without any articulation in the middle, three-lobed. *Column* erect, with a projecting rounded lobe or wing on each side.

Specific Character.—*Pseudo-bulbs* very long, broadly-ovate, deeply furrowed, with the ridges wrinkled, of a dark-green colour. *Leaves* from the summit of the pseudo-bulbs, two feet and more long, broadly lanceolate, tapering at each end, membranous, plaited. *Scapes* pendent from the base of the pseudo-bulb, a foot or more long, lax, bearing flowers in a raceme almost to the very base, which latter is sheathed with several brown scales. *Flowers* subglobose, of a rather full yellow colour, the unexpanded ones tinged with green. *Sepals* and *petals* very concave, obtuse, nearly equal, scarcely spreading. *Lip* small, articulate upon the elongated base of the column, deeply three-lobed; lateral lobes large, erect, embracing the column; middle one much smaller, retuse; within is a large gland spotted with red. *Column* semicylindrical; its wings short; the back slightly downy.

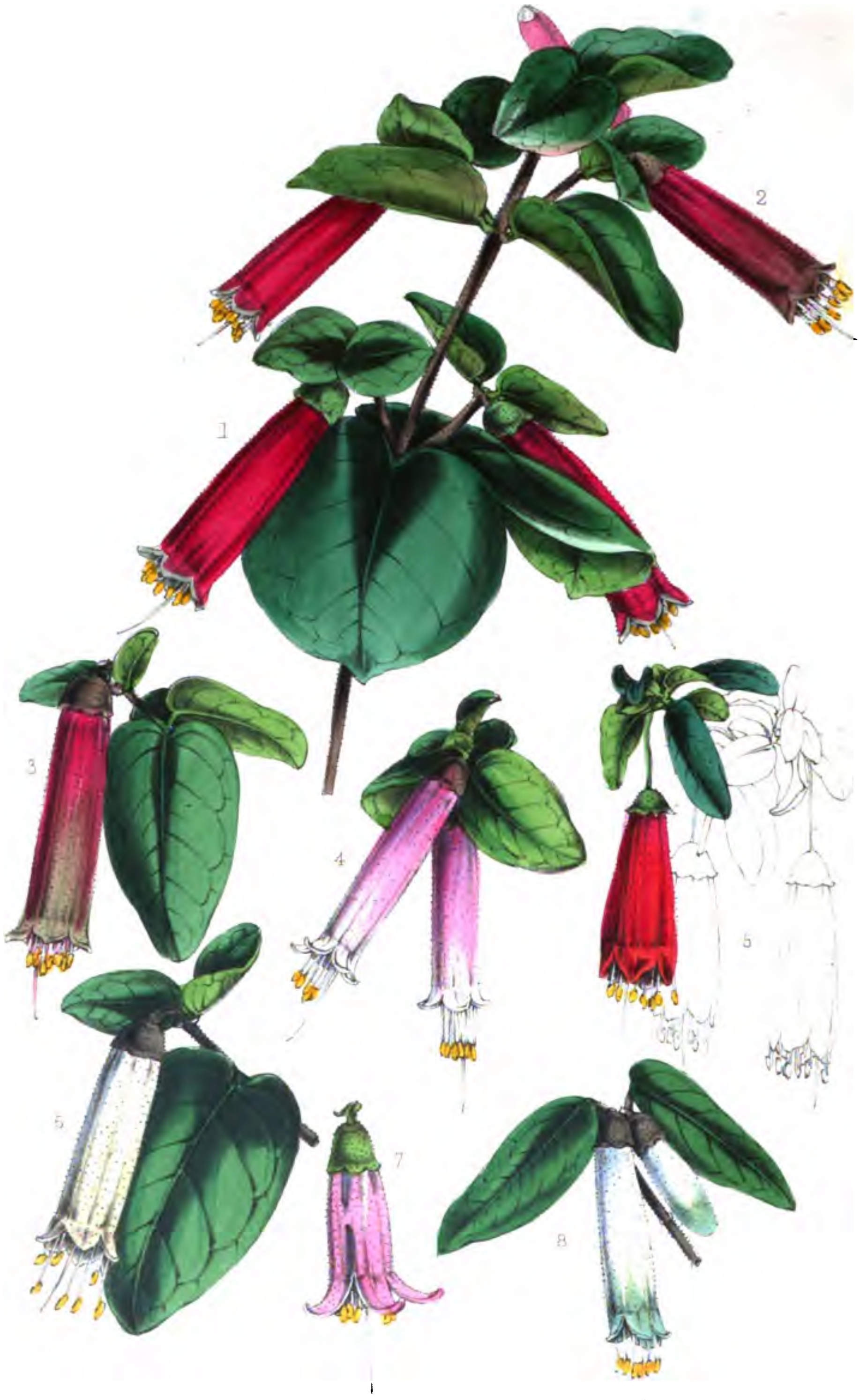
Synonyme.—*Peristeria Barkeri.*

Two very distinct species of this superb genus were introduced to this country a few years ago, one of which has been named *A. Humboldti*, and the other (our present subject) *A. Barkeri*. The first of these Dr. Lindley has clearly proved to be identical with the *Anguloa superba* of Humboldt, Bonpland, and Kunth; and in 1843 he gave a beautiful figure of it in the "Botanical Register," t. 18, under the name of *Peristeria Humboldti*. In 1845 Sir W. Hooker gave, in the "Botanical Magazine," t. 4156, a plate of a magnificent variety of that species which he named *Peristeria Humboldti fulva*. The latter gentleman also has given a description and a fine plate in the "Botanical Magazine," t. 4203, of our present subject, under the name of *Peristeria Barkeri*.

On a recent examination of the genus Peristeria by Dr. Lindley, and by carefully studying its species, he has discovered that, in one or more particulars, the above two species essentially differ from the genus under which they were placed. "The type of the genus Peristeria is the 'Dove plant' of Panama, which has an erect scape; globose, fleshy flowers; equal and regular sepals, united at the base, but projecting forwards with the chin usual in the Maxillaridous section; a lip continuous with the column, fleshy, arrow-headed at the base, distinctly articulated in the middle, and having its epichilium undivided and bent down over the face of the column; a column short, fleshy, and wingless; and, finally, a pair of furrowed pollen masses, sessile in a narrow gland." In *Peristeria Humboldti* the upper sepal stands a little apart, so as to give a somewhat two-lipped appearance; the lip has no articulation in the middle; and the pollen masses are placed at the end of a narrow caudicle, terminating in a crescent-shaped gland; added to which the column is furnished with a pair of very broad wings. All these circumstances induced Dr. Lindley to separate *Peristeria Humboldti* and *P. Barkeri* under the name of *Acineta;* in allusion to the immoveable, jointless condition of the lip.

For the introduction of this magnificent species we are indebted to the late G. Barker, Esq., of Birmingham, whose collector, Mr. Ross, discovered it at Xalapa, in Mexico: it has since found its way into many collections. The specimen from which we made our drawing flowered in the stove of R. G. Lorraine, Esq., Wallington Lodge, Carshalton, in October last.

To grow well, it requires a powerful heat, plenty of water, and abundance of pot-room, with good drainage. In the season of rest it should be kept perfectly dry.



S. Holden, del. & Lith

Correas.

1 *brilliant* 2 *rubra* 3 *curiosa* 4 *rosea alba*

GAINES' SEEDLING CORRÆAS.

(1. Brilliant—2. Rubra—3. Curiosa—4. Roseo-alba—5. Pulchella—6. Magnifica—7. Delicata—8. Viridiflora alba.)

Class.
OCTANDRIA.

Order.
MONOGYNIA.

Natural Order.
RUTÀCEÆ.

Generic Character. — *Calyx* cup-shaped, four-toothed or entire, permanent. *Petals* four, somewhat connivent at the base, or joined into a long tube. *Stamens* eight, equal or longer than the petals, the four opposite to them, the shortest; filaments smooth, awl-shaped, or dilated above the base. *Ovary* four-lobed, densely beset with stellate hairs, and as if it were furnished with a calyptra. *Style* four-furrowed, smooth, terminated by a four-lobed stigma. Fruit of four capsular carpels; cells truncate, compressed. *Seeds* two or three in each cell, shining, fixed to the inside.—*Mag. Bot.*, vol. ix., t. 267.

GARDEN HYBRIDS.

Not many plants can surpass Corræas as attractive winter-flowering inhabitants of our greenhouses, whether we take into account the amazing profusion of flowers they produce, or the protraction of their blooming season during the dreariest months of the year.

Their culture, too, is simple and easy; they merely require the protection of a cool airy greenhouse, to be potted in a mixture of heath-mould and light sandy loam, to have the pots well drained, and care to be taken not to over-water in winter.

All the species are natives of Australia, New Holland, &c.; but the subjects of the present plate (if we except *pulchellum*) are hybrids, raised by Mr. Gaines of Battersea, in whose Nursery, Nos. 1, 2, 3, 4, 6, and 8, were drawn last October. Nos. 5 and 7,* were figured from specimens flowering at Messrs. Henderson's, Pine-apple Place, in December last.

The subject of hybridization has long been one of deep interest to the intelligent cultivator; but since the lucid remarks of the late Dean of Manchester in his admirable papers on that subject inserted in the *Horticultural Journal*, vol. ii., parts 1 and 2, it has become doubly so.

Although of late years much has been done in this respect amongst Pelargoniums,

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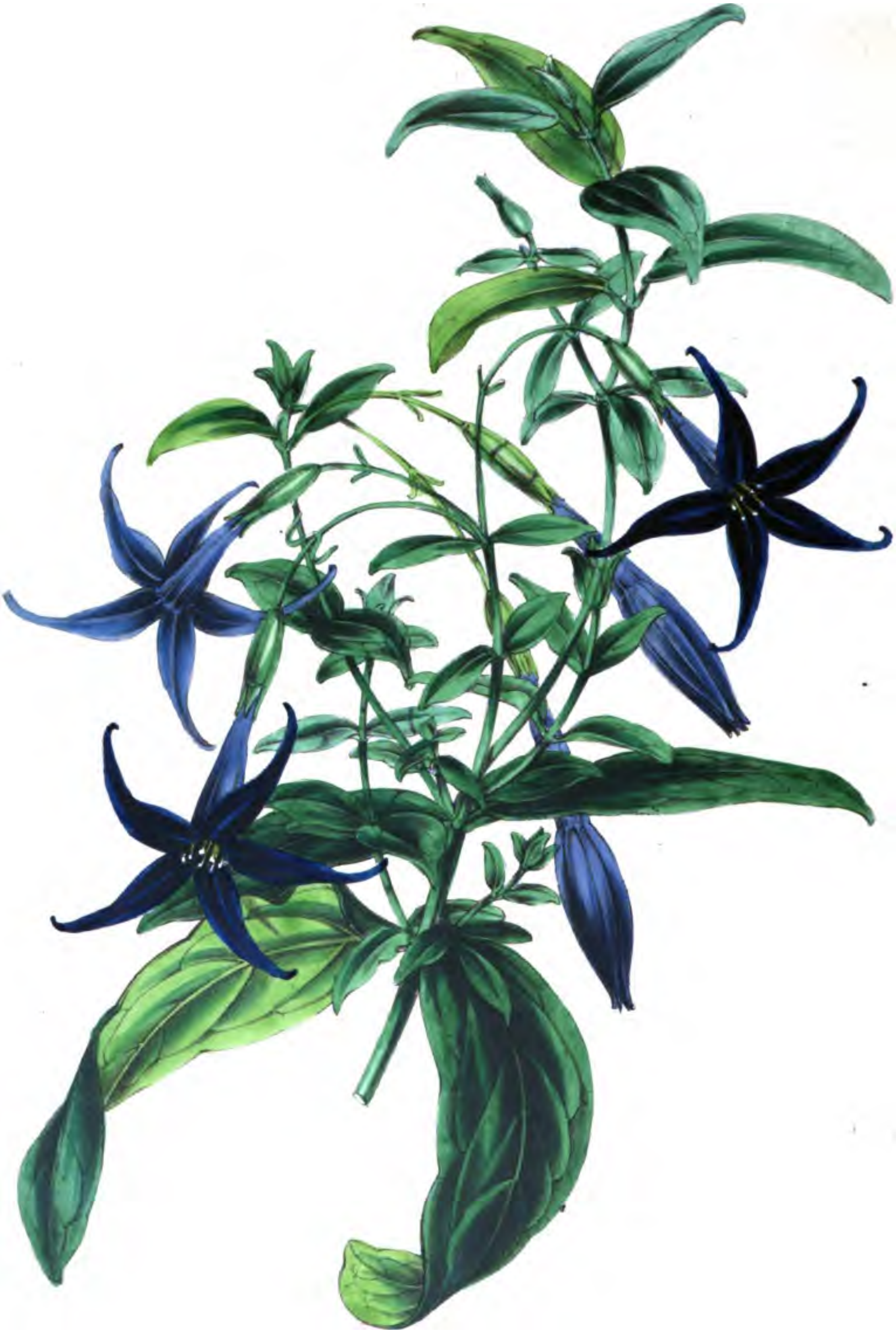
* This variety has been introduced into the accompanying Plate by mistake. It has been already figured in a preceding volume.

Fuchsias, Calceolarias, Camellias, Cinerarias, and other plants, yet this mysterious operation is very imperfectly understood; facts and observations daily demonstrate what we said in *Mag. Bot.*, vol. ix., p. 267, that the intermixture of different species of plants by hybridization is quite endless, but as yet the system is scarcely beyond its infancy.

Cuttings of the present subjects strike root, if made of the half ripened wood, which are planted in pots of sand, and placed in a gentle heat, under a glass. They however grow slowly. Grafting and inarching is therefore sometimes resorted to with advantage; for this purpose *C. alba* makes a very good stock, and grows quicker by cuttings than any other species. The proper time to graft is early in spring, just when the plants show signs of growth.



S. Holden del & Lith

Leianthus nigrescens.

LEIÁNTHUS NIGRÉSCENS.

(Black-flowered Leianthus.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
GENTIANÀCEÆ.

GENERIC CHARACTER.—*Calyx* campanulate, five-cleft, equal, smooth. *Corolla* funnel-shaped, limb five-cleft, regular. *Stamens* five, unequal. *Anthers* incumbent. *Style* elongated. *Stigma* capitate. *Capsule* two-celled or two-valved, many-seeded.

SPECIFIC CHARACTER.—Greenhouse biennial. "*Stem* scarcely branched for about a foot-and-a-half (but sending out annotinous shoots in the autumn) which terminate in a large much-branched trichotomous *panicle*, two to three feet high. *Branches* as well as the stem rounded. *Leaves* most crowded on the stem, opposite, decussate, lanceolate, acuminate, three to five-nerved, spreading, the base almost connate, distinct and smaller, and more acuminate on the branches. *Petals* long, slender, with usually a pair of subulate bracteas or small leaves below the calyx. *Flowers* gracefully drooping, two to three inches long. *Calyx* of five deep, subulate, oppressed segments, rather more than half the length of the tube of the corolla. *Corolla* deep purplish blue-black, funnel-shaped, regular. *Tube* cylindrical, dilated a little upwards; the *limb* of five spreading, or almost recurved lanceolate very acuminated segments, about half as long as the corolla. *Stamens* five, inserted a little below the middle of the tube. *Filaments* slender, rather longer than the tube. *Anthers* oblong, two-lobed. *Pistil-ovary* oblong, two-celled, and *style* rather longer than the filaments. *Stigma* large, capitate, two-lobed, velvety."—*Sir W. Hooker, Bot. Mag.*, 4043.

SYNONYME.—*Lisianthus nigrescens.*

THIS very singular and interesting plant is a native of Mexico and Guatemala; it has also been found in Tanetze, Talca, Comaltepeque, and Xalapa. For its first introduction to this country we are indebted to Mr. Skinner, who gathered the seeds in Guatemala, and sent them amongst other things to the Royal Gardens at Kew, in 1842. Since that period it has been received into several other collections in different parts of the country; and from a fine specimen flowering at the Nursery of Messrs. Knight and Perry, King's Road, Chelsea, in July, 1845, our drawing was made.

The culture is perfectly easy. The seeds require sowing at the same time, and in the same manner as tender annuals; and by placing them in a hotbed, or other convenient place where they will receive a genial moist heat, they will soon vegetate.

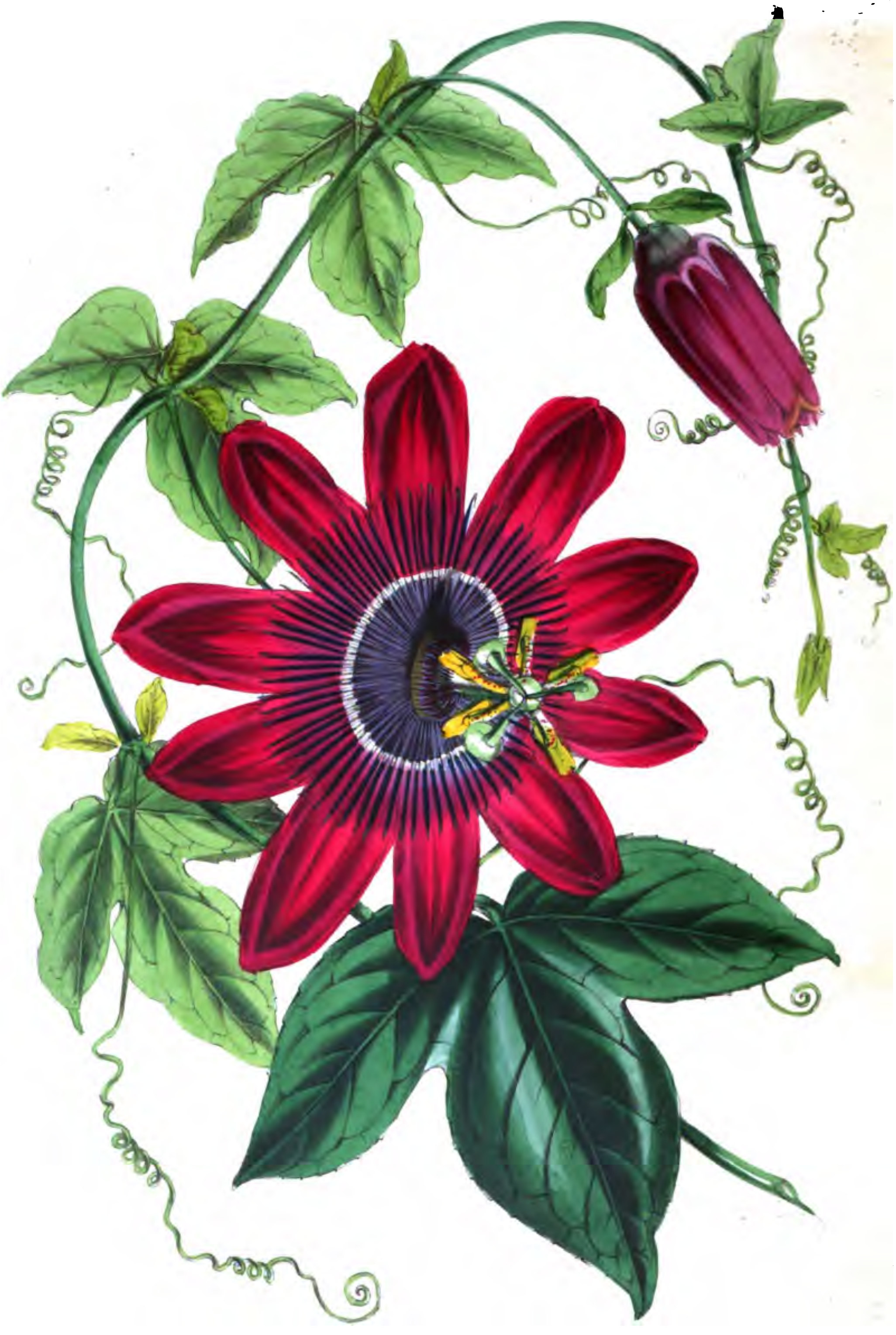
When the young plants are of a sufficient size, pot them off in a mixture of equal parts of heath-mould and well rotted leaf-mould; and as they advance in growth, repot, adding each time a little loam and sand, diminishing the quantity of leaf-mould.

In the following spring place the plants in their flowering-pots, in a mixture of equal parts of loam and heath-mould, with a little sharp sand to keep it open, and be careful to give a good drainage with potsherds.

If grown in a moist atmosphere with plenty of light and heat, they will by June be three feet or more high, and will begin to show signs of flowering. When in bloom they are very striking and singular objects, in consequence of the very dark blue of the flowers; remove them at this time to the greenhouse, and by shading from the sun, the flowers will continue in perfection a long time.

Cuttings of the young wood strike most readily if planted in pots of sand and placed under a handglass in a little heat. They are also increased by seeds, which ripen freely.

The generic name was given by Grisebach from *leios* smooth, and *anthos* a flower. The corolla is regular, which distinguishes it from *Lisianthus*, with which genus it was formerly incorporated.



S. Holden, del & Lith.

Passiflora Kermesina Lemicheziana.

PASSIFLÒRA KERMÉSINA LEMICHEZIÀNA.

(Lemichez's Crimson Passion-flower.)

Class.
MONADELPHIA.

Order.
PENTANDRIA.

Natural Order.
PASSIFLORÀCEÆ.

Generic Character.—*Calyx* with a five-parted limb; tube short, having the throat ornamented with a filamentous crown. *Petals* five or wanting. *Stamens* usually five, though rarely with only four. *Ovary* pedicillate. *Berry* commonly pulpy, sometimes slightly membranous.

Specific Character.—*Stem* climbing, round, shrubby, smooth, dark-green, shaded with purple, slender. *Leaves* three-lobed, cordate, shining, dark-green on the upper surface; beneath pale green, shaded with purple, lobes serrated. Leaf-stalks round, with two small feathery glands about the middle. Stipules leafy, somewhat heart-shaped, terminating in slender tendrils; toothed. *Peduncles* solitary, axillary, slender, much longer than the leaf-stalks. *Calyx* crimson, consisting of five linear-oblong, acute sepals. *Corolla* consisting of five crimson petals, at first spreading, but afterwards becoming reflexed. *Filamentous crown* deep purple, spreading. A stove climber of great beauty.

Lemicheziana differs from the species in the following particulars.—It is altogether stronger in growth; its *leaves* are much larger, and not coloured beneath. *Sepals* and *petals* oblong-lanceolate, very deep crimson. *Segments of the crown* purple, mottled with white.

This very handsome hybrid is said to have been raised in Paris, by a nurseryman of the name of Lemichez, whose name it bears. It was introduced by Messrs. Rollisson to this country, in whose collection it flowered in October, 1846, when our drawing was made.

As a stove climber, it certainly is well deserving of extensive cultivation, being of a luxuriant habit, with moderately strong stems, beautiful, shining, dark-green foliage, and producing great abundance of fine, deep-crimson flowers, after the manner of *P. kermesina.*

To those persons who have convenience for growing a number of tender climbers, few plants are so easily managed or are more beautiful than the various kinds of *Passiflora.* Some, in addition to splendid flowers and exquisite fragrance, bear a profusion of very pleasant, eatable fruit. Others, although destitute of the two last qualifications, are yet so highly ornamental, that they can scarcely be cultivated to too great an extent.

Of those which bear edible fruit in addition to their other attractions, the following may serve as a selection:—

P. alata.—An old species introduced from the West Indies in 1772, which will grow, flower, and fruit abundantly in almost any situation, either in some waste corner of the stove, or even under the floor.

P. *Buonapartea.*—This kind is much less known than it deserves to be: the flowers are deep red, with a purple and white crown, and fine fragrance: it does not thrive well unless the roots come in contact with bottom-heat, and have plenty of room to spread; it then flowers freely, and bears large orange pear-shaped fruit, full of watery pulp, of a pleasant flavour.

P. *coccinea.*—This handsome scarlet flowering species was introduced from Guiana in 1820; the fruit is about the size of a small apple, and contains a very sweet pulp.

P. *edulis* is too well known to need much description: it is nearly hardy enough to endure the greenhouse, but will not ripen its fruit in any situation except the stove; the fruit is purple, acid, with a rather peculiar flavour, and is stated to make a most delicious preserve.

P. *incarnata, or May Apple.*—A greenhouse plant, which has been introduced since 1629, but is far from being common in collections. It very commonly dies down to the roots in autumn, and regerminates again in spring; it has therefore been considered an herbaceous plant: the flowers are pink, and very fragrant, and the fruit grows to about the size, and is the colour of an orange.

P. *laurifolia, or Water Lemon.*—A native of the West Indies and South America, whence it was introduced in 1690. The flowers emit a pleasant fragrance, and the fruit is yellow, rather larger than a hen's egg, and contains an eatable pulp.

P. *maliformis, or Sweet Calabash.*—Although introduced in 1731 it is fully equal to many fine ones of a much later introduction. The flowers are large and dull red, with blue rays, and very sweet scented. The fruit is yellow, and about the size of a large apple.

P. *phœnicea.*—A species introduced in 1831; the flowers are dull crimson, and the fruit about the size of a hen's egg.

P. *quadrangularis,* to do well should always be planted where it receives bottom-heat. Cut in well every autumn, after it has done flowering, renew the soil, either wholly or in part every spring, just before it starts to grow, and when in flower give a great supply of water.

P. *serratistipula.*—A native of Mexico: the flowers are not very showy, but the fruit is very sweet and palatable.

P. *tiliæfolia.*—A native of Peru, and introduced in 1823. It has beautiful red flowers, and the fruit is very handsome, and the flavour pleasant.

All the above, with the exception of P. *incarnata,* are natives of the tropics, and consequently require the stove, and thrive best in a strong moist heat, with a good supply of water when in a growing state. They are all robust growers, and should be planted in a good rich loam with one-fourth rotten dung.

It must be remembered that excepting P. *edulis* none of the above species will set their fruit freely, unless the stigma be fertilized by the pollen of other species; for this purpose no kind is so well adapted as *P. edulis* and *P. cærulea.*

Of those which are alone ornamental, and on that account deserve extensive cultivation, the following may be sufficient to notice:—

P. alato-cærulea.—A hybrid raised in 1823, grows very freely in a cool part of the stove or a warm greenhouse. The flowers are rose colour and white, and the crown blue and white.

P. cærulea and its varieties are all nearly hardy, and grow freely in light soil trained against a wall in the open air.

P. cærulea-racemosa.—This is another valuable hybrid, raised betwixt the two species whose name it bears. The flowers are purple, and are produced in great abundance in a cool greenhouse.

P. kermesina.—This brilliant species is a free flowerer, of very slender growth, and makes a fine appearance in the stove.

P. kermesina Lemicheziana.—See Plate.

P. Loudonii has much the habit of the last, but the leaves are larger, and are not coloured with purple beneath, like *P. kermesina.* It also requires a warm stove and a very moist temperature.

P. Middletoniana (*P. fragrans*).—A fine species, native of the West Indies and South America. The flowers are purple; the plant requires the cool stove.

P. Mooreana.—Is a native of Buenos Ayres, and was introduced in 1837. The flowers are very fragrant, nearly the colour of *P. cærulea*; and the plant is almost hardy.

P. picturata.—A native of the Brazils, bearing rose-coloured flowers, and purple and white rays. It requires the heat of the stove.

P. racemosa (*princeps*).—Flowers scarlet, exceedingly handsome. A native of Brazil. Requires the heat of the stove.

P. sanguinea.—A hybrid, with fine large deep-scarlet flowers, very handsome; requires the heat of the stove.

All the slender-growing species and varieties of Passiflora require a soil rendered light by the addition of heath-mould. Never sift the soil for any of them, but roughly break it, and always give a good drainage. All the species strike readily from cuttings, planted in sand and placed in a brisk heat.

The generic name is derived from *passio*, passion; and *flos*, a flower.

ON THE AERIAL SYSTEM OF FORCING.

In our last article upon the equable diffusien of heat in plant-houses an attempt was made to show that almost every species of machinery in use, and each attempt to modify or improve the same, had been erected and regulated upon erroneous principles. We have two important, paramount objects in view—economy of money and fuel, and the utmost attainable equability of temperature within the area of the building. There is no desire to interfere with the views of the opulent: we perceive the very extensive desire that exists among persons of limited property to cultivate and protect the plants which they admire; and therefore, if it be possible, we would enable the amateur to possess himself of the best appliances at the least possible outlay.

Fuel of any description can but afford a certain quantity of heat; and if we even admit, that, by any possibility, the whole inflammable matter of a combustible be absolutely consumed, so as to give forth its heat, it still may happen that a major part of the heating power will never enter into the atmosphere of a house. A very few months have elapsed since it was proved by one of our philosophical lecturers that when coke, charcoal, and particularly pit coal, is burned in stoves of common form, the coal itself that lies above the portion that is in a state of actual combustion is in part dissolved, and carried into the chimney in the state of *carbonic oxide*, an inflammable gas which, under other circumstances, would take fire, give out its heat, and be itself converted to *carbonic acid;* a gas which is the result of complete combustion, and in itself capable of extinguishing fire or flame with the utmost rapidity. The cylindrical, double-cased, hot-water boilers not long since so much in vogue, yield demonstrative proof of the distillation of unconsumed fuel; for at the very time when the coke immediately above the bars is, to the height of four or five inches, in a state of active red heat, the cooler fuel above, recently supplied, shall appear quiet and inactive till atmospheric air from above is admitted, by removing the cast-iron air-tight cover which secures the summit of the inner cylinder, when an explosive puff of pale-blue tinted flame will rush through the cylinder, to a height that might seriously injure the incautious operator when examining the state of the fuel. This circumstance alone, connected as it is with the loss of so much inflammable matter, ought to disqualify these dangerous boilers.

Since the announcement of the Polmaise system, with its paraphernalia of hot plates and wet blankets, the writer has had occasion to inspect some erections, and to bestow observation upon multitudinous articles on the merits and defects of the so-called system. The result is, that attempts to prove too much on the one side, and virulent abuse, replete with disgraceful falsity on the other, have thrown dust into the eyes of the sincere inquirer after truth, and equally retarded the progress onward toward the right path. But all this while the original Polmaise has passed into shadow, and a very much improved mode of heating, which has only borrowed the *name*, while it retains little of the substance, has, in some two or three instances, been adopted by men of discerning intellect, to the great improvement of the protective and forcing departments of horticulture.

A very fair approximation to an uniformity of heat through an entire house—with a very great increase of generally diffusable temperature, if desirable, and at command—has been attained. Our direct observations led to the publication of that article (Page 70, No. 160) on an erection which comprised a vinery and cooler department. This machinery acted so well, that, while admitting defects, we can conscientiously recommend it to those who intend to erect one or two small houses upon rigidly economised outlay: it should seem almost impossible to erect a greenhouse upon more safe and efficient principles, especially if, in lieu of sliding, or even movable *front* sashes, there be a number of external ventilating holes at the ground level, or even rather below it, made in the front, back, and end walls for the admission of air from without: all or any of these may be left open, or be closed, as circumstances indicate; but it is certain that air so admitted will never, even in the coldest weather, produce the comparative injury to plants which a blast dashing from the top, or even by front and end sashes invariably causes.

The *great principle* before-named, first inculcated by Dalton, that *each gas* acts as a vacuum to every other gas, ought always to regulate the operations of all who erect plant-houses. It is this principle which forms the basis of the modified Polmaise system; and it, or any of its improved forms, must be made to conform to that principle.

There are few persons, in this day of philosophical mechanism, who have been more assailed by rude aspersions than Mr. Meek, of Nutfield, in Surrey. Had that enthusiastic, high-minded gentleman, avoided the name of Polmaise—had he simply and philosophically announced his own conceptions, now carried into full effect, he would have been welcomed as an able exemplifier of scientific structures. He shall speak for himself in the following extract from the Journal of the Horticultural Society:—

"The philosopher tells us there is a form of matter which diffuses heat with a rapidity unknown to any other; and, moreover, this very instrument of diffusion is the object itself which we seek to heat; thus, instead of employing a go-between, we heat *that*, at once, which it is our object to heat. We desire to heat a certain amount of *air*; we provide the heat; the air appropriates and diffuses it with an equality and speed which evidently cannot be attained by any other means. Is it any wonder, that a plan based on principles so natural and so philosophical, should be eminently successful? that it should be cheap, as compared to any other means, in its first cost, and economical in its use? For the expense of diffusion is saved. What necessity exists of carrying heat to the air, when the air will travel to the heat? What need of boilers, cisterns, stopcocks, pipes, and water, to produce and diffuse atmospheric heat? Is it not certain that such means must involve waste in cost, use, and constant repairs? Boilers to unset, to clean, occasionally split, pipes oxidizing on the one surface, and choking up with incrustation on the other."

All this is true, and much more. We have within five minutes' walk, a gentleman's greenhouse, plant-house or grapery, according to the actual processes to which it may be, *pro tempore*, devoted; it has a capital hot-water apparatus or triple range of cast-iron pipes, very conveniently fitted up; the furnace also consuming any poor combustible matter, and little of it. Yet the prime cost of this machinery, we are told, exceeded £60, to say nothing of the house itself. And yet, this very complete arrangement of pipage might, and would be exposed to the same calamity which, not many years since, caused the loss of all the plants of a handsome conservatory. It happened that the year 1837 terminated with a temperature so mild, (nearly 50°) that the idea of fire never once occured; the pipes were full, and all was safe; but on the 3rd or 4th of January, 1838, the celebrated frost of that year set in *at once*. The whole volume of water froze, and, we believe, remained ice till destruction had done its work, for the fire from behind, (*vis a tergo*), could produce no effect upon a medium so non-conductive as that of ice. As the very reverse of this fatal visitation, a small vinery, furnished with an elaborate hot-water apparatus, suddenly lost an entire crop of fruit, by the intensely rapid heating of its tubes, which, defying regulation, raised the atmosphere to 100° in January. This was the result of a cost incurred a month or two before, and which exceeded £40!

The defects, therefore, of our best machinery are manifest; they do not equally heat the air of a house; and so far as they *do* act by radiation, whether from hot brick flues, or from water tubes, or tiled channels, they render the atmosphere dry, and so far insalubrious. Now then, in order to remedy these defects, and to induce a constant interflow of fresh, warm air, charged with aqueous vapour, and therefore brought, as it were, into the condition of a new gas that can flow interstitially, and thus insinuate itself among the minutest particles of air already in the house, we must so arrange the apparatus that no particle of its hot surface be so exposed as to act by direct radiation.

A considerable period must elapse ere we can hope to construct a furnace which will neither cause the loss of perhaps half its fuel by the chemical formation of carbonic oxide, nor the diversion of the heat actually obtained, from its proper course; but, notwithstanding, approaches have been made—and we had the satisfaction to inspect a stove which appeared to be built upon principles that gave promise, at least, of great prospective improvements in the construction of forcing-houses. This house had a span roof, with aspects to south and north; also, corresponding front and back upright lights. The quarries are far too small, and the laps are not puttied; therefore, from the extent of the glazed surfaces, it is peculiarly exposed to atmospheric influences. Yet by the situation of the furnace and its channels, all the heat, save that which escapes by the chimney-shaft, absolutely passes into the atmosphere of the house without any radiating surface whatsoever, and its equable diffusion appeared quite astonishing.

To be a little more particular, let us suppose the case of an amateur devoted to horticulture, but whose position demands the exercise of thorough economy; he intends to build on a principle that shall secure the consumption of the lowest grade of fuel, cinders, breeze, screenings of coke, &c., and convey the heat developed, void of all the sulphurous and other noxious gases, usually produced by exposed heated surfaces, intermixed and diluted with pure atmospheric air and aqueous vapour, so as to fill the entire area of the erection.

Let the erection be from 24 to 30 feet long, and 16 to 20 feet wide in the clear of the external walls, within which a walk of convenient width to allow of a 2-feet-wide shelf passes on three of the sides; the inner space will form an oblong chamber or pit, built of 4½in. brickwork, and made perfectly air-tight, excepting in parts where air openings are left for especial purposes. This pit will perform all the offices of the dung, tan, or leaf-bed of the old stoves, or of the brick water-tank of modern erections; and houses so furnished are qualified to act as Pine or plant stoves, or for the purposes of propagation. If the chambered pit be omitted, greenhouse culture can be followed out to perfection by a modification of the furnace and channels of heated air suited to the particular objects of the party.

The furnace must be placed either at one end, or at the center of the back wall of the house, according to the construction and aspect of the latter. It is to be so arranged as to deliver the whole of its radiated heat into the area of a chamber rendered completely air-tight on the sides and at the roof, and to convey the hot air into the pit by propulsion from a concentrated stream of cold air that shall pass below the floor of the pit, through openings left for the express purpose. Thus, by what the learned style *vis a tergo* (a force from behind), a column of dense cold air will propel forward the warm air of the fire-chamber, attenuated and rendered more specifically light by the expansive power of a broad heated surface; and being so pushed onward by a perpetually moving power from below and behind, it will naturally find its way through six or more orifices left in the walls of the pit at half their height above the floor, and in places remote from the furnace.

Persons will be apt to exclaim—this is the Polmaise to all intents and purposes. We meet the objection, if such it be, by observing that we repudiate the term, because it implies the original superfluity or rather deformity of the blanket appendage; and again, because it fosters a feeling of prejudice which is always inimical to improvement.

We have witnessed, and can vouch for the reality of steady advances in horticultural architecture; we have felt and paid for the defects of flues, and of water channels; we know that there must exist causes of loss in fuel: but comparing results, and judging from analogy, we are satisfied that from the first brick laid to the completion of a greenhouse, warm-pit, or enlarged stove, and thence onward throughout the progressive operations of simple protection to those of the most exalted power of forcing, economy in the best sense of the word does and will absolutely prevail by the adoption of the aërial system of moveable currents philosophically provided for.

Such air can never propagate cold, because whenever it is employed as the propelling force in winter, it is already partly warmed, being obtained from the atmosphere of the house itself, though from the coldest part of it, that is, from and rather below its floor. Let any one witness a stove at work, or even feel the warm air that flows through the cold tank hours after every spark of fire has been extinguished, and he will doubt no longer.

HINTS ON FLOWER-GARDENING.

Although so much has been written of late years, not only in this but in many other gardening periodicals, on the management of the flower-garden, it is somewhat remarkable that either the principles are badly carried out, or, what is worse, in so slovenly a manner, and that, too, in places where better things might be expected and ought to be produced, as to make one think the managers do not take so much interest in first principles, as the progress of decorative art renders it necessary they should do. That much of this in too many places arises from a want of those means and appliances to boot, which can only be supplied by proprietors, is too true; but that there are other places in which every necessary aid is allowed with little better progress, is also equally notorious. This arises partly from the managers of our learned Societies considering, that as these societies were established for the promotion of science, such minor matters as decorative gardening are beneath their notice, and hence so many of the public gardens in the country have become receptacles for mere botanical curiosities, three-fourths of which are neither useful nor ornamental, and which, in the writer's opinion, are wholly unworthy of cultivation. Fortunately, the public are beginning to think the same, as is evidenced by the alterations which have recently been made in the Botanical Society's at Sheffield, Birmingham, and some other places, where botanical curiosities, which can only interest the learned or curious, have been replaced by plants which are gay, and at the same time interesting to the community generally.

Other societies will doubtless follow this example; and then, instead of hearing the several curators boasting of having a plant of this or that all but worthless weed, we shall visit their gardens for the purpose of seeing the progress which science, art, and cultivation are making; and also view them as examples, to shew gentlemen how their private gardens ought to be conducted. We have always looked upon public gardens in this light; and we contend they ought, in every department, to be kept in the highest possible order, so that instead of lagging behind as they have hitherto done, to be examples of the science of progress in their several neighbourhoods, which gardeners might look up to and copy. Then the public would feel an interest in them, and they would be properly supported; but so long as they are inferior in point of attraction to second or even third-rate private establishments, it is preposterous to expect the public to take any interest in them. This may appear to be a digression from our subject; but we make it for the purpose of shewing how much we expect from those societies which have gardens, and to show how we think they ought to contribute to the progress of cultivation and decorative gardening. Suppose the garden of the Horticultural Society of London, instead of being what it is in point of design and arrangement, had been laid out as it ought to have been, or as some of our leading landscape gardeners would lay it out at the present time, with spacious lawns and flower-gardens, splendid plant-houses, and a kitchen and fruit-garden replete with every necessary in the way of forcing-houses, which the most fastidious could desire, and that every department had been kept in the highest possible trim; would it not have been better supported than it has been, and also have been more deserving of support? The same remarks apply to almost every public garden in Great Britain; they are badly supported, not so much from a want of taste on the part of the public, as from the fact of the several establishments not offering sufficient attraction to interest the public in their proper management. Only imagine the vast influence these societies would exert over the public mind if they were managed in first-rate style, and were examples of superior cultivation, as from the thousands and tens of thousands which visit them annually, the majority of whom may be considered to be interested in horticulture, great good must result.

Now, to proceed with our subject as connected with the principles of flower-gardening, the prevailing errors are those of planting flower-gardens without properly harmonising or contrasting the colours; planting tall plants in small beds, and small plants in large ones; neglecting to train or regulate the plants as they progress in growth, so as to get the plants in proper and appropriate shapes; and growing a quantity of comparatively worthless plants for sake of a collection, when half the quantity of the best kinds would not only suffice, but would be far more effective as a general arrangement, and decidedly more interesting to the common observer. For example, we cannot see the necessity for cultivating a hundred different varieties of Verbenas, when more plants of fifteen or twenty of the best and most distinct kinds would answer the purpose better; neither can we see the necessity of filling fifty beds with fifty different plants, when twenty kinds would be equally appropriate, and make a far more effective arrangement. No, no; the whole of our plant collections require a severe weeding: at least one-half of the flower-garden plants at present cultivated should be thrown to the winds, and have their places filled by less rare but more showy plants. We do not wish to see all the inferior plants banished entirely, as some of the best of them, though unfit for masses, may be admissible for the mixed border, and there will make a fine display. What we want for massing in the flower-gardens are plants of close, compact, dense habit, producing abundance of bright clear flowers, not by fits and starts as some do, but throughout the season, from the time they are planted out until they are destroyed by the frost in the autumn.

Too much attention cannot be paid to the habit of the plants used for grouping purposes, as, if the plants are naturally of compact growth, they will not require so much training and pegging down to keep them in form, neither will they look so weedy or neglected where proper attention is not paid to them.

Among many of the new flowers, which, as flowers, in the eye of a florist are very beautiful, there is a great want of compactness in the habit of growth, so much so as to render many of the finest flowers almost useless for flower-garden purposes. Take for example some of the Verbenas, and a single plant will cover several square yards of ground almost without producing flowers sufficient to form a *bouquet* for the button-hole. These by gardeners are, and very properly, called weedy plants, and such ought always to be excluded from a well-appointed flower-garden. For Verbenas of fine habit I should name such as Hendersonia, Atrosanguinea, Resplendens, Beauty, Princess Royal, Favorite, and others of similar habit; but those which have been bred from Neillii, Incisa, and Speciosa, are all loose growers. Again, of Petunias, we have some beds of Smithei superb, the finest purple in cultivation, and also Meteor, Princess Royal, and Famossissima, which at the present time are not more than nine inches high in the tallest part of the bed, and are yet so densely covered with bloom, that you could not in any part from the centre to the sides find three square inches in one place which is not covered with flower. These beds were planted about the middle of May, the plants being placed about fifteen inches apart, they have been pegged down three times since they were planted, and are now what we have described them. One thing is worth remarking, and which in a great measure accounts for their being so dense and dwarf, and that is, the young shoots are regularly stopped once a week by pricking out the points of the blooming shoots, so that we have constantly a succession of young wood coming up from the bottom, and also a regular succession of bloom. One great advantage of training Petunias so closely as this is, that neither wind nor rain has any power upon them, whereas beds in which the plants are allowed to get from eighteen inches to a yard high, always look shabby for a long time after a heavy storm.

Now, our object in calling attention to these things at the present time, is to suggest the propriety of commencing a reformation of our flower-garden management at the proper season; and as, by the time these remarks meet the public eye, it will be the season to commence the propagation of plants for the coming season of 1848, we would insist upon the following general principles being attended to. First, with reference to the form of the garden itself; if it is proposed to make any alterations in its form, let the plans and arrangements be made at once, and after you have convinced yourself of the propriety of the design, lay it down in a temporary manner on a bed of sand, and then fill each bed with flowers of the same colour which you think of planting the beds with next season; recollecting, that if the beds are large, each may be edged with its complementary colour—as, scarlet with white, orange with blue, yellow with purple, and the reverse; and so on of the various tints of colour. This edging or bordering is an excellent plan when cold colours, as blue, or purple, are planted on grass, as it relieves or throws the colour up just the same as a nicely shaded black ring on a sheet of paper makes the part within it look whiter than the part outside. For illustration, a bed of *Salvia patens* on grass is, at a distance of say two hundred yards, almost inconspicuous; but surround the same bed with a broad margin of *Calceolaria viscocissima*, which is bright orange, and it directly bocomes bright and gay at a considerable distance.

In designing the garden, too much attention cannot be paid to introducing as simple forms as possible; for though scroll patterns and intricate tracery work might be admired in years gone by, when gardens were more sought after for their form than the plants which they contained—in these days, when the cultivation of flowers is the principal object, those forms of beds which are the most suitable for that purpose must be preferred. Now, of all the forms for effect, there is certainly nothing equal to the circle or oval, or some modification of these, always preferring the curve or line of beauty; but, of all things, avoiding acute points, and too many straight lines. Of course, if a geometrical garden has to be formed on a square piece of ground, and adjoining a square building, the boundary of the garden must, to a great extent, partake of the form of the ground and surrounding objects; but, as a general rule, straight lines should be avoided as much as possible. Another great fault in designing flower-gardens, especially in small places, is that of overcrowding the beds; the effect of which is, that much ground is frittered away in walks and small beds, neither of which can by any possibility ever look well. We lately re-arranged a garden, destroying upwards of thirty beds, and replacing them by eleven beds of good solid proportions, allowing plenty of space between the beds; and the effect, now that the plants are in bloom, is much better than it ever before was; while at the same time, from the beds standing free and open, they are seen to greater advantage, and are also better adapted for the purposes intended.

It is not enough, however, that the beds in a flower-garden should harmonise as to colour, but it is also requisite that harmony should go further than this, and that they should correspond in height and character of plants: thus, we would not plant two corresponding beds, one with scarlet Pelargonium, and the other with scarlet Verbena, for though in point of colour such an arrangement might be near enough, the effect would be discordant, inasmuch as the two beds would not entirely correspond; therefore we should either plant both with Verbenas, or both with Pelargoniums. Small plants are admissible in large beds, but not tall plants in small ones; but, as a general rule, it is the best to let the height of the plant be proportionate to the size of the bed.

When the plan of a garden is decided upon, and the arrangement made, number each of the beds, and in a book, opposite corresponding numbers, enter the names of the several plants which each bed will require, allowing of strong growing plants two to each square foot, and of smaller ones, such as *Lobelia compacta*, *azurea*, and the like, three or four plants to the same space. With an arrangement made in the autumn, and a guide like the preceding, it is easy to provide plants for a large garden, as it is not necessary to provide more plants than are actually required, and it is easy to see that the plants are always ready. If the arrangement is left until near the planting-out time, in the spring, the chances are that you will be deficient in a stock of some things, and have to "make shift" with some inferior kinds, and "make shifts" in gardening are always dangerous.

Another, and the last fault, in flower-garden arrangement, which we shall notice at this time, is that of arranging beds in pairs, when they ought to be planted in fours; thus, for example, supposing this page to be a geometrical garden with corresponding beds at each corner, the common practice would be to plant two beds with one colour, and the other two with another: this is wrong, and it will be found much more harmonious to plant all four beds with one colour, and, if you like, edge them with their complementary colour.

The preceding remarks apply also to the arrangement of Rose gardens, which require reforming very much, banishing the standard or tall roses, and planting the masses principally with dwarf kinds, which can be pegged down, so as almost to hide the ground entirely. We know nothing more interesting than beds of Bourbon, China, Tea, and other perpetual flowering roses, which delight one from May until October, and are always gay. More attention must be devoted to these things: indeed, for our own part, we should not think of planting any but perpetual roses, in future; and from small gardens the French and Hybrid China roses ought certainly to be expelled.

CULTURE OF THE GENUS STYLIDIUM.

Of this interesting genus, about thirty species have already been introduced, and many more remain to be brought into this country. They are natives of New Holland, Van Diemen's Land, and different parts of Australia, where they grow abundantly on open sandy plains, fully exposed to the sun, but where the soil beneath is wet and spongy. In these situations the foliage grows healthy and strong, and the flowers are produced in profusion. Every species is of small stature, and although the blossoms of none of them are very showy, yet all are pretty and interesting: they are, for the most part, produced in racemes, but some few appear in spikes and corymbs. The prevailing colours are rose and pink, of various shades and degrees.

The structure of the flowers is exceedingly curious, and from this peculiarity the genus derives its name. The stigma is concealed in a cavity at the top of the column, surrounded by the anthers; this column is much longer than the limb of the corolla, hangs down on one side of the flower, and is extremely irritable. If touched by a pin, or any other substance, on the under side, it instantly springs up and flies across to the opposite side; in a few minutes it again returns to its original position, but it is some time before it again regains its sensitiveness. This curious property is supposed to be intended to protect the parts from insects: whether this be the reason or not, there is no doubt some important end is answered by so singular a provision. For the successful culture of these pretty plants, their natural habitats will furnish a pretty tolerable guide.

The best soil for all the stronger growing kinds is sandy heath-mould, with a small portion of light loam, but for all the more delicate species heath-mould alone should be used. It is advisable to place them in pots rather small than otherwise, for in winter, when there is a large quantity of soil, too much moisture is apt to be retained, which is certain death.

Good drainage is indispensable; perhaps more plants are lost for the want of this than by any other cause. Lay abundance of broken crocks at the bottom of each pot, and also mix some with the soil, which latter should neither be passed through a sieve nor broken too fine, but be rough and porous, that the water may percolate freely.

The proper situation is near the glass, in a cool, airy, greenhouse. In summer, during the growing season, if sufficiently drained, they can scarcely have too much water; but it is better not to adopt the common practice of placing them in saucers of water, for very often, by so doing, the lower roots perish, and although the plants may look pretty well during summer, on the approach of winter they usually perish.

When the growth and flowering seasons are over, gradually diminish the quantity of water, and thus prepare the plants for their winter rest, which will continue from the end of October until the end of March, during which period the soil in the pots should be kept partially dry, and the plants should stand in as cool and airy a situation as possible, to be free from frost.

The annual species, as *S. proliferum*, &c., and biennials, as *S. adnatum*, *fasciculatum*, &c., require to be raised from seeds (which are produced pretty freely) sown in pots filled with fine sandy heath-mould, after the manner of other tender annuals. The profusion of bloom they bear, and the length of time they continue in perfection, are two qualifications, which, if taken in connection with their interesting habits, fully compensate for their want of splendour.

The perennial species, as *S. graminifolium*, *Brunonianum*, &c., are many of them highly ornamental; the whole deserve cultivation: they are increased both by seeds, cuttings, and division. The *first* are sown, and treated as annuals. *Cuttings* of the half-ripened wood are planted in well-drained pots of sand, or sandy heath-mould, and are placed under a glass, either in a propagating house, or any other situation where they will not receive too much heat and moisture. *Division* is effected immediately after the season of rest. The shrubby species, as *S. fruticosum*, *laricifolium*, &c., are increased by cuttings, as above, and also by seeds.

ness of form or development of flower. *Clerodendron paniculatum*, in the collection of Mr. Ayres, fine specimen near six feet high, having several spikes covered with its scarlet blossoms. *Aphelexis humilis*, a fine, handsome, and well-flowered specimen. *Kalosanthes coccineus* superbly flowered. *Dipladenia splendens*, though a small plant, had several heads of bloom well developed; the above were exhibited by Mr. Barnes, gardener to — Norman, Esq, Bromley. *Dipladenia crassinoda*, several exhibitors had this charming creeper in good condition; among them may be noticed a specimen in Mr. Ayres' collection and in that of Mr. Hamp, and another in Messrs. Frazer's collection from Lea Bridge Road Nursery. *Ericas;* this splendid tribe of plants was exhibited in great variety by several individuals: among the superior sorts may be mentioned *E. Cavendishiana*, in the collection of Messrs. Fairbairn, a noble specimen; another equally fine, though smaller, in the collection of Mr. Ayres, both extremely well flowered. *E. Dicksoni*, a rare and handsome yellow species. *E. obbata*, fine and well coloured, were exhibited in a collection from Messrs. Veitch. The latter was well-flowered in the collection of Mr. Hunt, gardener to Miss Traill, Bromley, as was *E. Massonii*, a fine and well-flowered specimen. This species we found in good condition in the collection of Mr. May. *E. ampullacea rubra* and *tricolor rubra* were splendidly exhibited, both for form and size, in Mr. Epps' collection. *E. inflata alba* was also shown in good perfection by Mr. Rowland, Clapham. *Franciscea villosa* was in good flower, along with a well-grown specimen of *Phænocome prolifera* though not in good flower, a fine specimen of *Pimelea mirabilis*, a var. of *P. decussata*, but much finer, and a well-grown neat plant of *Roella ciliata*, were in Messrs. Frazer's collection. The latter plant was grown and flowered excellently by Mr. Jack, gardener to G. Lorraine, Esq. *Leschenaultia formosa*, this charming plant was most splendidly grown and flowered by Messrs. Green and Hunt, both for compactness of plant and profusion of bloom. *Justicia coccineus* and *Stephanotis floribundus*, the latter especially was a well-formed and well-flowered specimen, in the collection of Mr. Taylor.

Sobralia macrantha splendens, Miltonia spectabilis, and *Oncidium Lanceanum*, were excellently flowered by Mr. Williams, gardener to C. Warner, Esq. *Stanhopea oculata*, Mr. Redding, gardener to Mrs. Marryatt, had this fine species in splendid condition, exhibitfng no less than fourteen scapes of bloom in different stages of growth. *Oncidium Lanceanum* with seven scapes, covered with its richly coloured flowers, was exhibited by Mr. Plant, gardener to J. H. Schrŏeder, Esq., Stratford Green. *Epidendrum cuspidatum, Aerides odoratum* and *Brassia var. brachiata*, were capitally bloomed by Messrs. Rollisson's, Tooting. *Oncidium Phelpsianum*, a noble specimen in fine flower, was exhibited by Mr. Hunt. *Oncidium Wentworthianum* was equally fine, and advantageously shown by Mr. Barnes.

OPERATIONS FOR AUGUST, &c.

The glorious weather which had sufficiently prevailed previous to the middle of the month, the period at which we wrote, to memorably distinguish July, 1847, will have required additional vigilance on the part of the culturist. Redoubled attention will have been necessary to keep down insects, and to insure the proper exercise of the watering-pot. If like weather is still prevalent, similar matters will demand chief attention; aud preceding calendars may be consulted for instruction respecting the clearance of insects, and also how to water so that the liquid applied may do the greatest amount of good.

Next to what has been mentioned above, propagation is of chief moment at this season. Two-thirds of the plants required in ordinary gardens may be struck by inserting cuttings of them in suitable material out of doors, if they are closely covered a proper length of time with a hand-glass. All hardy, and the chief part of half-hardy things, usually employed for flower-garden decoration, can be induced to root if they are favoured with the simple accommodation mentioned. Pelargoniums, Chinese Roses, Pansies, and a host of other genera, will root freely without any covering beyond that a garden mat will afford, when used a few hours each day to protect from violent sun, for the first few days, cuttings of those that are put in. Carnations must not be neglected as to their being layered this month; and Pinks, late-growing ones, may still be piped or layered. Beds of struck Pink pipings may be formed, or they should be potted where they are meant to form plants for forcing.

Layering and budding of all shrubs, trees, or plants, that can be increased by such agency, must be properly regarded. More things, probably, are in a fit state to layer at this season than at any other; and this should be borne in mind.

Increase of shrubs, plants, &c., by whichever of the many ways of propagation it is effected, involves more considerations than may be imagined. For instance, it sometimes occurs that a particular shrub or specimen plant would be greatly improved if its dimensions were enlarged; and some of the methods of propagation may be called in to effect such an object, without additional numbers of the plants operated upon being produced. But the principal matter brought under attention by proceeding to propagate is the merits of the various plants about to be propagated. The advantage of giving these considerations their due share of attention will be obvious to almost every one; and such considerations are the more worthy of attentive regard, because every season a multitude of things are forced into notice which have little beyond novelty to recommend them.

In nearly all departments of the garden the principal general work, at this time of year, is of a routine character. Everything should be done in each to develop and maintain its several attractions.

Growing plants, to whichever class they belong, must have due attention; so also must those which have matured, or are maturing, their growth. Autumn and winter-flowering things will well repay whatever care and trouble is taken with them. They are an important item amongst the objects of the culturists' care at this season. Various annuals help to create a very effective display in autumn, both as pot plants and in the open ground; they should have due attention accordingly.

Seed gathering, and the care and preservation of bulbous or tuberous-rooted things, is a matter of some importance henceforth for the remainder of the season, and must not be neglected.

Insects in this month are very numerous; every place teems; turn which way we will, our path is beset with millions of living creatures; and this year especially, Roses and many other plants have severely suffered by the attack of the more injurious. Persons who are very imperfectly acquainted with the habits of these little creatures, are liable to consider every insect met with in a garden in the light of a depredator: this is far from being the case, some are quite innocuous, and may be considered as ornaments; others, although they attack our garden-plants, their depredations are too trifling to notice. The following are a few of those most active amongst flowering plants during this month :—

Pepper Moth (*Biston betularius*).—This moth is double-brooded; the first appearing in June, and the second in September. The eggs of the June brood are hatched in July, and continue feeding until the last week of the present month, when they go into the pupæ state, burying themselves in the ground, and the perfect moths appear about the beginning of September. The eggs of the autumn brood are laid on the stems of the Rose trees, and there remain until the following spring, and are hatched about the time of the expansion of the leaves. By the middle of May they are an inch long, and shortly afterwards go into the pupæ state, the moth appearing about the beginning, or towards the middle of June.

The caterpillars are greyish brown, with a faint red line down the centre of the back. In some seasons they are numerous; but as they feed only on the *Rose* leaves in the season of luxuriant growth, the injury occasioned by them is trifling. The perfect moth measures, when the wings are expanded, an inch-and-a-half; all the wings are dirty white, clouded with pale ash, and thickly spotted over the whole insect with black, whence the name "*Pepper Moth*."

Barred Yellow Moth (*Harpalyce fulvata*).—This beautiful little moth appears in June, and may be caught in abundance now by beating the Rose bushes. The caterpillar is greenish yellow, with a white mark, bordered by a darker one on each side. It feeds voraciously on the leaves of the Rose trees, but does not appear to attack the buds. The parent lays her eggs in July, and the caterpillars, which are this month feeding in considerable quantities, will be full fed early in September, and will then enter into the pupæ state, burying themselves in the ground, and forming brown cocoons. The perfect moths appear the following June. The wings measure, when expanded, about an inch across. *First pair*, tawny yellow, with a deep broad band across the centre; *second pair*, pale dull yellow, with darker margins.

Common Vapourer Moth (*Argya Antiqua*).—This interesting little moth does no injury to the Rose trees, although, in some seasons, the caterpillars are numerous; but the season of their feeding being that of vigorous growth, and their continuing but a short time in the larvæ state, render it unnecessary to adopt any means for their destruction. The wings of the male moth, are about an inch and a quarter across, when expanded. *First pair*, dull red, clouded with brown, and having a white spot near the lower side of the outer edge. *Second pair*, paler, and without spots. The female is without wings, and seldom moves from the place where she issues out of the cocoon. Caterpillar blue-grey, with a row of orange and red spots on each side, from head to tail, four white tufts on the back, and many other tufts of long loose yellow hairs, with two long black tufts proceeding from the head, and one from the tail, measuring, when full grown, an inch and a half long,

Lilac Tree Slender Moth (*Gracillaria Anastomosis*).—This little creature is double brooded; the first brood of moths appear, on the wing, in May, from the larvæ of the previous autumn, and the second appear in July. The eggs are laid in rows, consisting of from three to a dozen, and are placed chiefly along the nervules on the under sides of the leaves. In five or six days the eggs are hatched, and the larvæ eat into the leaves, mining to the upper surface, where they feed upon the parenchyma, leaving the epidermis, or outer skin, untouched. After they have fed in this way for about a fortnight, they leave these mines, and commence rolling the leaves. The roll is fastened on the outside with a few threads, and the ends are drawn close. Within this habitation they remain until they are full grown, eating only half the substance of the leaf; they then let themselves down from the leaves, by means of fine threads, and retire beneath the ground, where they spin strong cocoons, and in a few days change into pupæ. It is principally on *Lilac trees*, planted in shady situations, and on the under branches, that this little moth lays its eggs. The size of the moth, when the wings are expanded, is something less than half an inch.

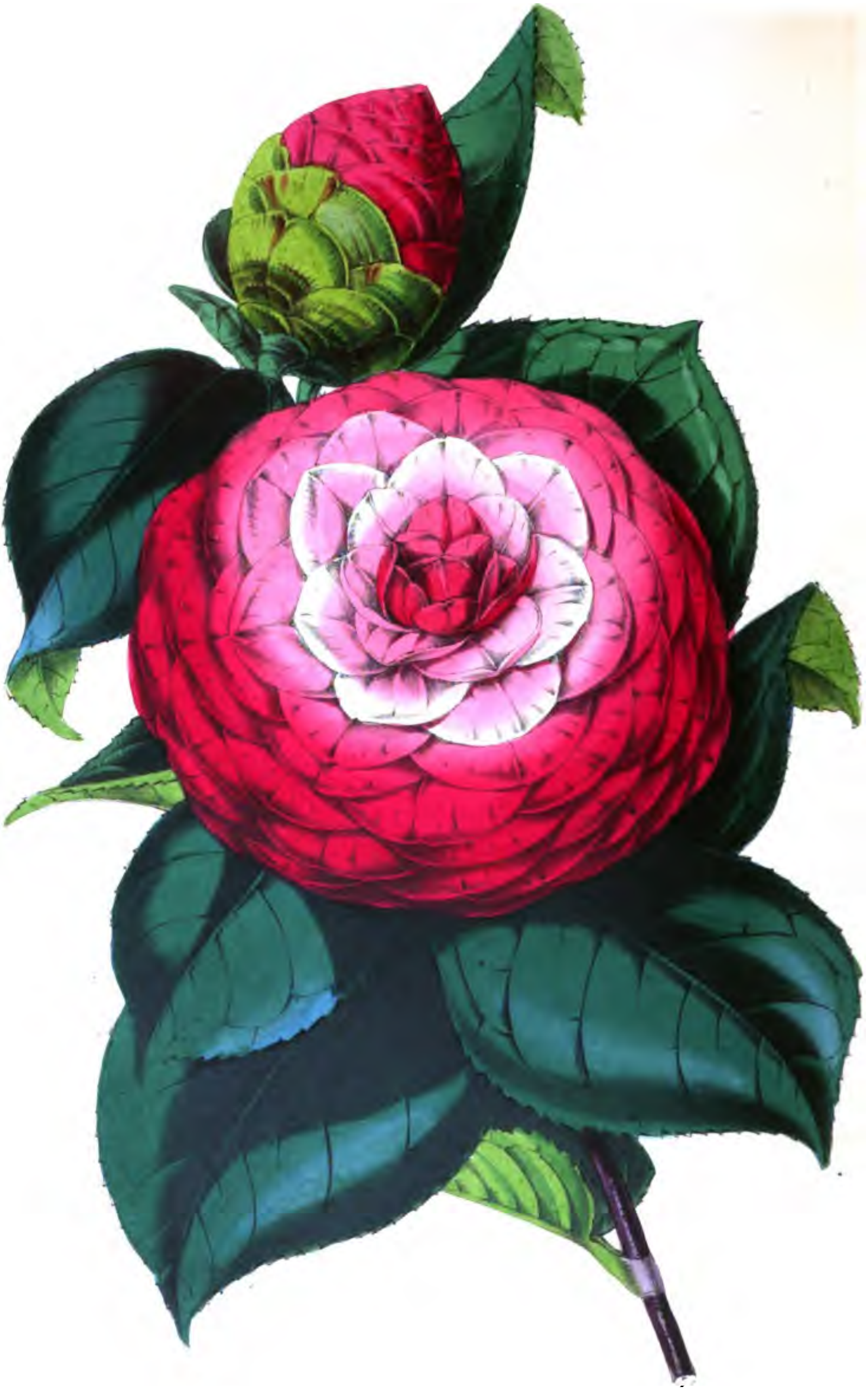
Lilac Beauty Moth (*Pericallia Syringaria*).—This is another very beautiful moth, which feeds upon the leaves of the Lilac tree. It is only single brooded. The caterpillars appear about the middle or end of July, seldom in large quantities. They continue feeding until the end of September, when they go into the pupæ state; and the perfect moth appears the following June. The caterpillar is dark brown, spotted with black, and has a black head. The chrysalis is brown, thick, and rather short. The wings of the moth are nearly two inches across, when expanded. *First pair*, yellowish-grey, marked with three brownish violet blotches. *Second pair*, dull grey, with a few black spots towards the edge.

Bridesmaid Moth (*Triphæna pronuba*) attacks almost every kind of plant, and is very destructive to the *Primula* tribe especially. The wings of this little creature are two inches and a quarter expansion. *First pair*, grey, deeply clouded with reddish brown. *Second pair*, yellow-orange, with a broad black band near the lower margin. This in most seasons is a very common insect. The caterpillar is a dull brownish green, marked with two rows of black spots down the back. The parent lays her eggs about the beginning of August, and the caterpillars commence their ravages just above the surface of the soil, feeding only in the night, and retiring beneath the earth in the day. In winter they become partially torpid, and may be found coiled up, beneath the shelter of large stones, or under rubbish, but as the spring advances they again commence their ravages, and towards the end of April are full fed; they then form a cocoon beneath the soil, and become pupæ, and the following July the perfect moths appear.

The Narcissus Fly (*Criorhina Narcissi*), this fine hot season, has no doubt been busy in most gardens. The grubs are dull yellowish white, about a quarter of an inch long, with a brownish head; in this present month it becomes full grown, goes into the pupa state in the ground, and the perfect fly appears the following March. They feed upon and cause the bulbs to rot.

The Tulip Fly (*Bibio hortulanus*) greatly resembles a gnat; it lays its eggs in the roots, in spring, and the young grubs continue to feed upon the roots until the present month. The grubs feed in company, and in very dry situations often destroy great quantities of the roots.

Carnation Thrips (*Thrips minutissima*).—This small insect (which is now very numerous) destroys the colour of the petals. The only way of preserving the flowers from injury, is to brush off the insects with a camel-hair pencil, as soon as they are perceived.



S. H. del. et lith.

Camellia Jap: miniata (Low's)

CAMÉLLIA JAPÓNICA, *var.* MINIÀTA.

(Vermilion-flowered Japan Camellia.)

Class.
MONADELPHIA.

Order.
POLYANDRIA.

Natural Order.
TERNSTROMIÀCEÆ.

Generic Character.—*Calyx* five-parted, coriaceous, surrounded below with many smaller scales. *Petals* five or more, large, jointed at the base, encircling a hypogynous disk. *Filaments* united below into a crown, attached to the petals. *Anthers* nearly ovate. *Germen* many-seeded. *Style* one. *Stigmas* three. *Capsule* coriaceous, pulvinate, or abortively globose, three-furrowed, three-seeded.

Specific Character.—*Plant* shrubby. *Leaves* alternate, coriaceous, acutely serrated, acuminate. *Flowers* axillary, or terminal, sub-sessile or pedunculate, single or double.

Var. **Miniata.**—*Flowers* measuring about three inches across, shape good, centre well filled up, brilliant crimson, and surrounded by three or more rows of pale rose-coloured petals; and these are again succeeded by other rows of a darker colour, giving the flower the appearance of variegation.

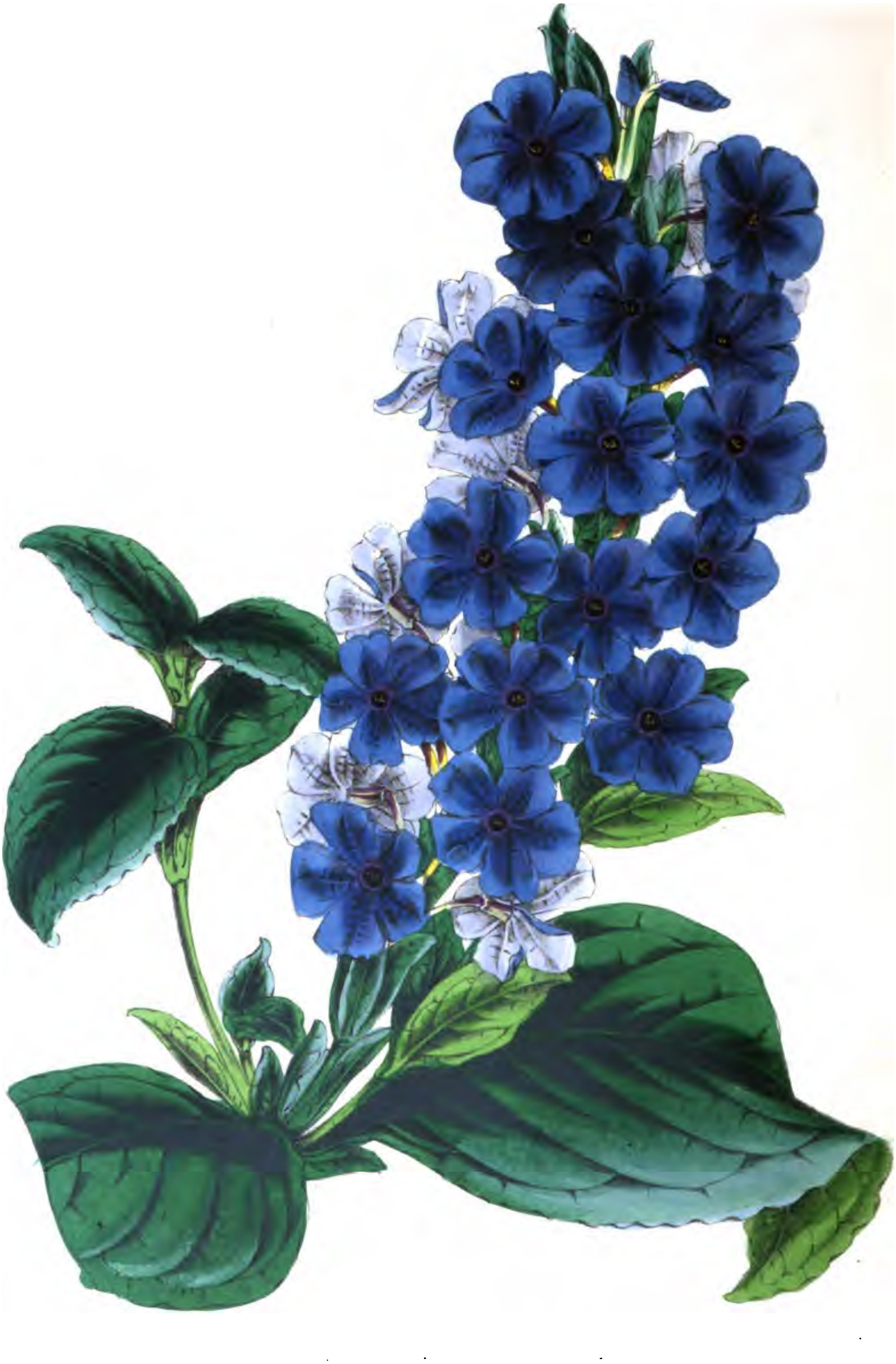
Although the Camellia, as a winter-flowering greenhouse plant, will scarcely admit of a rival, and its cultivation is now well understood, yet it is surprising that, for many years past, scarcely anything has been done in this country, towards the improvement of its varieties. From the continent many kinds, from time to time, have been brought; but, generally speaking, these have disappointed the expectations of purchasers, from their defectiveness: in some the petals are misshapen, ragged, or deficient; in others, where the petals are well formed, the outlines of the flowers are not good; and others, again, are not well coloured, or the markings are too variable to be depended upon. An apparently very good one has lately, however, been raised by M. Mathot, a nurseryman of Ghent: the flowers are said to be nearly five inches diameter, filled up in the middle, and pretty regularly imbricated. The colour is fine crimson, and the foliage is reported also to be good. This M. Mathot intends shortly to send out, under the name of *C. japonica Mathiotiana.* But the subject of our present plate, although a much smaller flower than the one just mentioned, is, perhaps, the best which has been produced for many years. It was raised by Mr. Low, of Clapton, from seeds saved on a plant of *C. myrtifolia*, which produced some imperfect blooms a few years ago; and Mr. Low has every reason to believe that it was fertilised with the pollen of a sickly *Lady Hume's Blush*, which stood beside it, and produced very irregular and imperfect flowers.

It will be seen, by our artist's very correct drawing, that, as far as respects the flower, it resembles *Myrtifolia* in its very finest condition; and when nearly full blown, it has some of the beautiful *blush white* of *Lady Hume's Blush* in its centre; and many of the flowers, also, are perfectly hexangular, like that variety. The colour of its flowers during the early part of the season is the finest crimson, and later in the spring, each has three or four rows of petals of a blush white, having the crimson in the centre. On the whole, it is one of the best Camellias, both as to form, regularity, and constancy, that has ever yet been raised. It never, at any time, has shown the slightest disposition to sport or run thin.

The habit is also good, having short, medium-sized, dark-green leaves; is an abundant bloomer, and sets its flowers as freely as either the old *Double-striped* or *Doncklearii.*

Full particulars relative to the culture of this beautiful genus will be found in former volumes of our Magazine, to which we beg to refer our readers. Our drawing was made at the nursery of Messrs. Hugh Low and Son, Clapton, the originator of the kind.

The generic name is given in honour of a botanist of the name of George Joseph Kamel or Camellius.



S Holden del & lith.

Eranthemum strictum.

ERÁNTHEMUM STRÍCTUM.

(Upright Eranthemum.

Class. **DIANDRIA.** *Order.* **MONOGYNIA.**

Natural Order.
ACANTHÀCEÆ.

Generic Character.—*Calyx* five-cleft, tubular, erect, skinny, persistent. *Corolla* monopetalous, funnel-shaped, tube slender, very long, limb five-parted, flat, lobes obovate and equal. *Stamens* two; filaments spiral at the base; anthers nearly ovate, compressed, and protruding beyond the orifice. *Style* ovate. *Stigma* erect, unequal. *Ovarium* spatulate, compressed, two-valved. *Ovules* solitary, lentiform.

Specific Character.—"A small shrub, four or five feet high, slightly covered with short hairs. *Stem* almost round, jointed, sending forth four-sided slender branches in remote pairs. *Leaves* about four inches long, acute at each end, their margins somewhat revolute and crenulate, smooth and shining, of a peculiar, greyish-green colour above; very pale, with prominent, hairy, and reticulated nerves and veins below. The uppermost, or floral leaves, at the base of the spikes, approach to the size and figure of the bracts. *Petioles* about an inch long, flattened above, and slightly marginated by the decurrent base of the leaf. *Spikes* solitary, erect, from one to two feet long. *Rachis* sharply four-sided, almost four-winged. *Flowers* large, dark blue, opposite in alternate pairs, which become remote as the spike elongates. *Bracts* adpressed, imbricating, with their ends cuneate-lanceolar, dark-green, acute, ciliate, about an inch long: the lowermost barren and becoming floral leaves; interior two very small, scarcely longer than the five calycine segments, and, like them, linear, pubescent. *Tube* of the corolla slender, pubescent, slightly enlarged towards the mouth, about twice the length of the outer bract. *Segments* obovate, truncate, spreading and flat, equal, very pale below; two filiform barren stamina between the filaments. *Anthers* in the mouth of the corolla, with parallel cells."—Dr. Lindley, *Bot. Reg.*, 867.

Amongst our winter-flowering stove plants, several species of Eranthemum deserve to be particularly mentioned; not so much on account of winter being their blooming season, as for the brilliancy of the colours of their flowers. First, the old *E. pulchellum*, figured Vol. II., page 55, is deserving of particular notice; it is a very free flowerer, and although its foliage is somewhat coarse, yet the intense brightness of its sky-coloured blossoms renders it a desirable plant: *E. crenulatum* and *E. fœcundum* also bear flowers of different shades of purple, and they have superior foliage. Our present subject, which few plants can surpass in brilliancy of colour, is, perhaps, the very best of all.

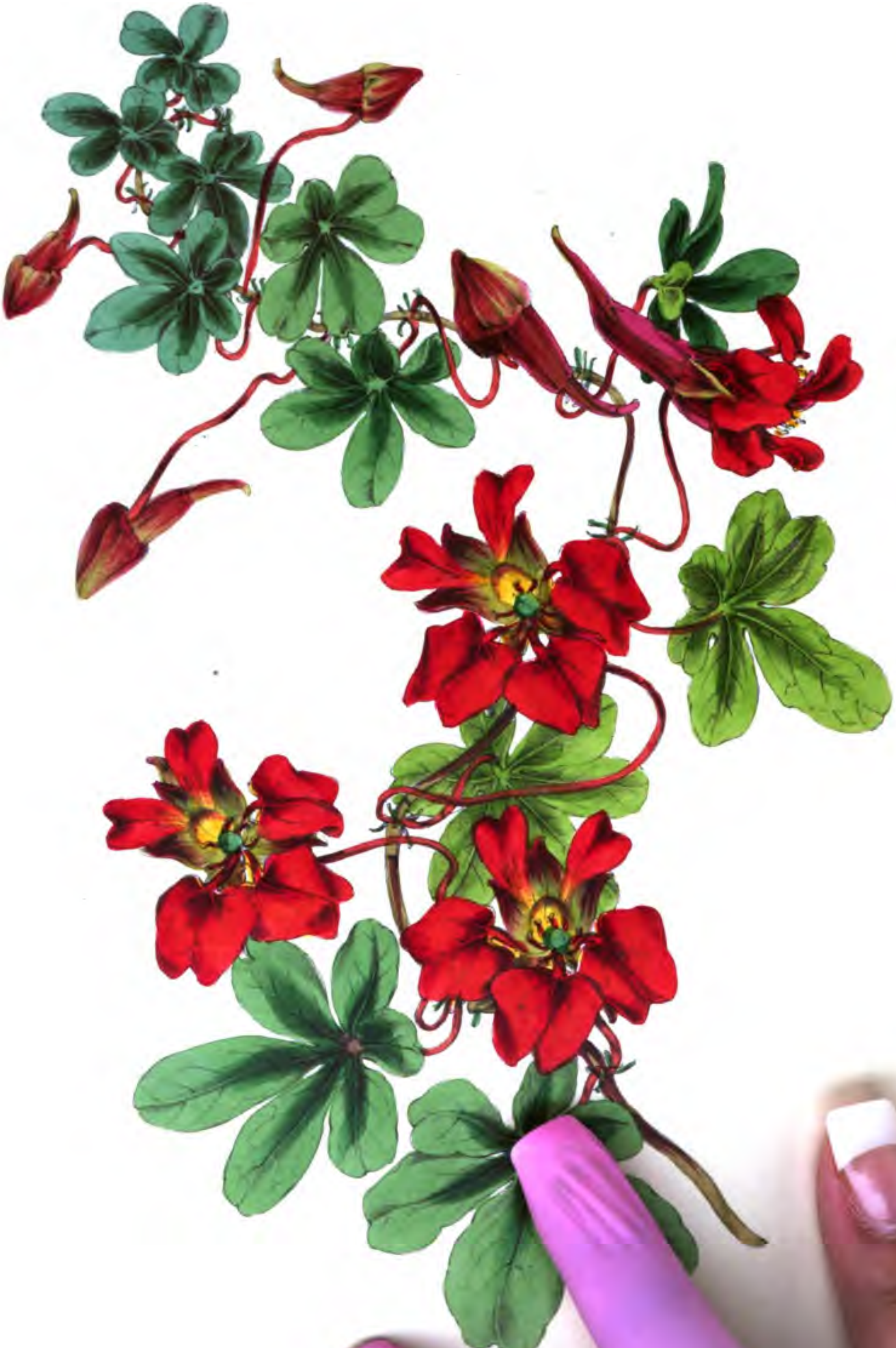
This very fine species was introduced from the East Indies so long ago as 1822, through the instrumentality of J. Slater, Esq., of Newick Park, near Uckfield, who raised it from Nepal seeds. It has since that time been pretty well distributed, and is now found in most good collections throughout the country, and is very deservedly esteemed.

Our drawing was made in February last, at the nursery of Messrs. Henderson, Pine-apple Place, Edgeware Road, where it flowered in fine perfection.

It may be grown in a common greenhouse, with the ordinary treatment of tender greenhouse plants; but to have it in perfection, the temperature of a stove is necessary. If grown in a pot, it must be allowed abundance of pot-room, as it is a robust grower, and if cramped at the roots, the foliage soon becomes ragged and shabby, and the flower-spikes are small and insignificant. But, like the *E. pulchellum*, to realise its highest character it should be planted in a border, in good, rich, loamy soil. During the time of growth, a very liberal supply of water is indispensable.

It may be increased readily by cuttings, planted either in pots of sand, or light sandy soil, and placed in a moist bottom heat; and if, when struck, they are potted off, and allowed plenty of root-room, they will make very fine plants in the course of one season.

The name is derived from *ear*, spring, and *anthos*, a flower; in allusion, perhaps, to several of the species flowering in an early part of the year.



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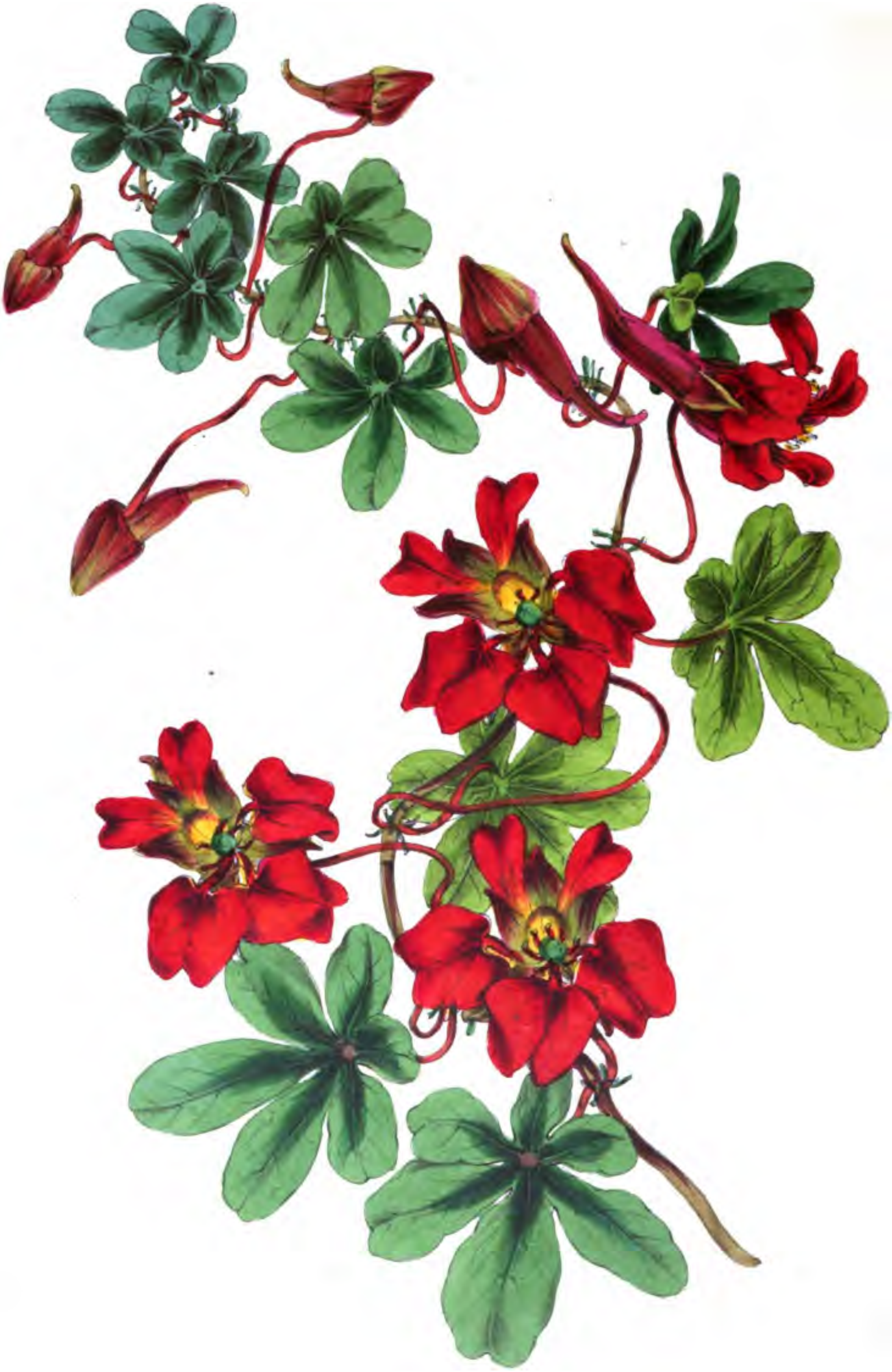
Tropæolu ciosum



S. Holden del. & lith.

Tropæolum speciosum

TROPÆÒLUM SPECIÒSUM.

(Showy Indian Cress.)

Class.
OCTANDRIA.

Order.
MONOGYNIA.

Natural Order.
TROPÆOLACEÆ.

Generic Character.—*Calyx* five-parted; upper lobe spurred. *Petals* five, unequal; three lower ones smaller, and evanescent. *Stamens* eight, free from each other at the base. *Carpels* three, sub-erose, kidney-shaped, indehiscent, furrowed, roundish. *Seeds* large, without albumen, attached to the cell, and conforming to it in shape. *Embryo* large. *Cotyledons* two, straight and thick.

Specific Character.—*Plant* an herbaceous perennial. *Root* a tuber. *Stem* slender, twining, smooth. *Leaves* on long flexuose footstalks, peltately cut into leaflets to the base. *Leaflets* five or six, ovate-lanceolate, cuneate, diverging pretty regularly from the centre, bright green, closely reticulated with purple veins. *Peduncles* axillary, long, flexuose, dull purple. *Calyx* deeply five-cleft, prolonged at the base into a broadly subulate spur, nearly straight, and three times the length of the segments of the calyx; segments ovate-acute, erect. *Petals* five; two upper ones narrow, sessile, fixed in the mouth of the spur; three lower ones on long claws, broad, all the most vivid crimson.

This very beautiful species of *Tropæolum* is another of the valuable introductions of Messrs. Veitch and Son of Exeter. It was discovered by their collector, Mr. William Lobb, in Patagonia, south of the island of Chiloe, who sent home living plants of it in a glass case. It was found growing in elevated situations very near the line of snow, so that there is little doubt but it will prove hardy. Messrs. Veitch had two plants turned out under a wall last September, both of which survived the last severe and protracted winter without shelter.

It is now blooming in the nursery of those gentlemen, in the open air, and has continued doing so for the last three months.

In habit, foliage, and seeds, it resembles the *T. pentaphyllum*, to which section it belongs; but in point of beauty it is superior, perhaps, to any species previously introduced. The flowers are about an inch-and-a-half in diameter, the same size as those of *T. Lobbianum* (figured vol. xi., t. 271), and of the same brilliant crimson-scarlet colour as that species; but from its slender growth, and the smallness of its leaves, it has when in flower a very superior effect.

It was exhibited at the Chiswick and Regent's Park Horticultural Exhibitions, and met with universal admiration; indeed it is one of those plants which are indispensable in a choice collection; no person ought to be without it. It is alone in the possession of Messrs. Veitch and Son, who kindly furnished us with the above particulars, and allowed us to make a drawing of the plant.

PENTSTÈMON M'ÈWANI.

(M'Ewan's Hybrid Pentstemon.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
SCROPHULÀRIACEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, with a distant, solitary bract. *Corolla* ventricose, bilabiate. *Stamens* didynamous, with the rudiment of the fifth, which is usually filiform, and bearded on the upper side. *Anthers* separate, usually glabrous. *Capsule* ovate, two-celled, two-valved, many-seeded. *Seeds* angular.

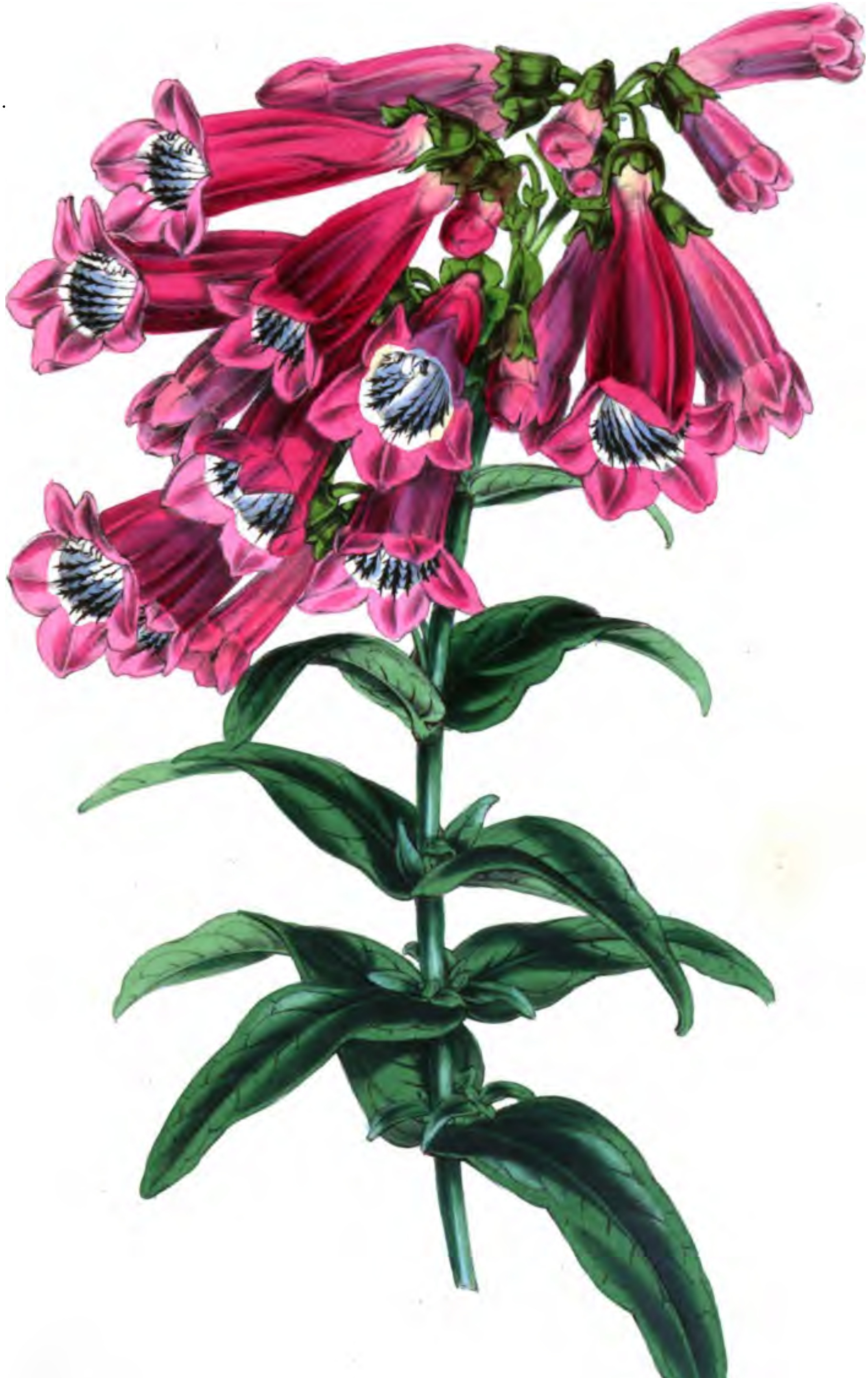
GARDEN HYBRID.

OF this well-known and ornamental genus, every species merits the cultivator's attention. All are perennials, with a half-shrubby habit, and will bear the cold of our winters tolerably well, seldom suffering unless the frosts are very intense.

Their cultivation is, generally speaking, very simple; they should always be planted in open, dry situations, in the flower garden or open borders, but never where there is a possibility of their being reached by the drip of trees; for they never thrive amidst excessive moisture, and in this lies the entire secret of the loss of so many choice kinds during the winter season.

They require a dry well drained soil; if it is disposed to be loamy it will be no worse, provided it is not too strong, when it should be lightened by the addition of a little heath mould, or leaf mould.

Our present subject, *P. M'Ewani*, is a hybrid, raised two years ago by a gentleman of the name of M'Ewan. The stock is in the possession of Messrs. Young, Nurserymen, of Epsom, in whose nursery it was flowering profusely last September, when our drawing was made. It is of a dwarf bushy habit, a very free bloomer, and makes a conspicuous object on the flower border. It propagates freely by cuttings, planted in pots of light soil placed in a little heat, or under a hand-glass in the open air.



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Pentstemon Mc Ewani.

CHARACTERISTICS OF THE SEASONS.

In a former article, an attempt was made to prove that the four horticultural quarters did not coincide with those of astronomical calculation. Winter did in fact commence in the fourth week of last November, which was later than usual—and suddenly, after a most spring-like visitation, redolent of flowers and sweets. The forcing gardener had, therefore, to task all his energies during the five or six successive weeks; for the thermometer tables proved, that, from the 27th of November, 1846, to the 3rd of January, 1847—both inclusive—the averages of night and day, minimum and maximum, were a trifle below 32°, or the freezing point of Fahrenheit, the wind blowing for the greater part from some northerly point.

January was a period of gloom, fog, and clouds. There were but five or six sunny days in it—namely, the 11th, 14th, 15th, 26th, 29th, and 31st—yet little rain fell; and here it may be proper to recal the attention of the gardener to the circumstance, that since the extreme glut of rain which fell during three weeks of October, and the frequent showers of November, about the third week, we had no ground rain at all. Places differ, but such was the general character of the season in the counties south of the latitude of London.

The coldest days of the year were the 12th and 13th of February, after the great fall of snow on the 8th and 9th days. This snow continued on the ground for several days, thawing only by solar power, till the 15th, when mild temperature and a change of wind to west by south, completely carried it into the ground.

March was a cold and dry month: a third of it, chiefly at the commencement, was overcast with clouds; the wind was north-east, cool and bracing; the barometer considerably above 30 inches. After the 8th the days were generally sunny; wind fluctuating; the nights verging to frost; and they became really severe on the 29th, 30th, and 31st. Nothing could well be more uncongenial than April in its early days—scuds of snow or sleet, frosty rime, piercingly cold wind; snow occurred again on the 15th, after which the days became fine, more warm, with occasional western breezes, and a very few gentle showers. Nature demonstrated its readiness to become active: it was only held back by adverse agencies, yet still gave ample notice of inherent energy, which only waited its opportunity. In this state everything remained till the 5th of May, when the mid-day temperature, in the shade, rose to 60°. The 6th day became warmer, and rather sunny, the evening was cool, and the wind veered from north-east to a southerly point. The blossom-buds of trees were then ready to expand: the perfect maturity of the last year's wood had provided a profusion of these fruitful organs, some of which had expanded, particularly those of the Pear among fruit-trees, and the crimson-blossoming *Ribes* among ornamental shrubs. Rain was still very deficient; but the want of it in volume sufficient to reach the deeper rooting plants, was the less felt in consequence of the very cool state of the weather.

On the 7th—a day worthy of record—the sun rose beautiful among gorgeous clouds, the air was balmy, a gentle dew (a rare meteor throughout the spring) clothed the herbage—all these, and the sweet song of the lark, gave earnest and assurance that winter influences had passed away, and given place to active spring. At noon, a soft and gentle rain—the first of the kind—commenced: it soon passed away; but being followed up till the 18th by showers, by alternations of shade, and occasional gleams, the face of all nature underwent an entire transformation. The fruit-trees became masses of garlands—grass, corn, flowers, in field and gardens, all rushed forth. Never was metamorphosis more complete; lost time was redeemed, and, had the rain, gentle as it was, continued till the 25th, with a medium temperature, every vegetable product would have been in advance.

As a check, however, one of those singular transitions occurred, the cause of which our philosophy cannot even dream, much less fathom. The 23rd day proved oppressively hot and sultry, distant thunder was heard in the south-east, but no rain followed. On the contrary, a glaring sun ruled by day till the end of the month: the temperature rose, about noon, to 68°, 74°, and in some places to nearly 80°, and the nights were as warm as those of July, *i. e.* 58° to 66° and 70°, and this parching, arid state of weather continued till the 6th of June.

"A cold May," is the old proverb; its reverse has ever been the prognostic of disaster, and the experience of the present year has established the doctrine of our forefathers! The plants of the vegetable garden began immediately to suffer; blossoms were rendered barren, those of the strawberry were visibly affected, as in May and June, 1846, the fertile organs becoming black, instead of enlarging. Apple bloom was scorched, and thus the anticipated crop was negatived to a degree that reduced it far below an average. As to the flower-garden, every part lost its grace and beauty; and that not only by the flagging of the plants, but by the several species of *Aphides*, or green-fly, that took possession, each of its peculiar and favourite prey. Thus, any high degree of temperature—especially if accompanied by a powerful sunshine—prior to midsummer, may be considered as an agent of sterility.

There is one phenomenon of singular interest which ought to be noticed. Two trees, the Oak and the Ash, are supposed by electricians to be in contrary states of electricity; or, in other words, if one is positive, the other will be in a negative condition. The terms are sufficiently dark and inconclusive; they evince our real ignorance of causes; but such as they are, we employ them. If then it be admitted that these trees are antagonist—the one attracting that which the other repels—it will be philosophical to conclude that they may be taken as indices of the existing condition of the earth and atmosphere. Public attention has of late years been excited by the remarks published in newspapers concerning the prognostics of the coming summer, afforded by the earlier or late developments of these trees. If, it is said, the Ash take the advance, the season will be rainy; if, on the contrary, it be tardy, and the Oak take the lead, the summer will be warm and dry.

During three seasons we have noted, and called the attention of observing persons to these indications. In 1842, 1844, and 1846, the Oaks were the earlier, and those summers were hot and dry. In 1845 a wet season succeeded to the earlier leafing of the Ash. Let us now retrace their course during the late spring. Notwithstanding the rigour of the weather, which extended far into April, the Ash gave indication of speedy expansion; the Oak was more tardy: hence a showery season was anticipated. As warmer temperature approached, the expansion of the leaves of both trees promised to be simultaneous. So soon, however, as the mild rains came, that is, as before shown, about the 7th to 10th of May, the race was no longer equal; the Oak took the lead generally, and although it was evident that there was great irregularity, some trees being a week or more in advance of others, yet the Ash was effectually distanced. The admirers of woodland scenery, especially those who have studied the characters of trees, will be able to retrace the circumstances just related, and therefore can recollect the prevailing weather of the entire spring and summer. Certain it is that rains and showers have fallen opportunely, though scantily; but as a whole the year has been dry. With the exception of a thunder storm, July has been a prodigy of splendour; and thus the only month of the twelve which admits the term *periodical*, as applied to its meteorology, has witnessed a complete exception to the rule.

As a great deal has been said in all publications on horticultural and rural affairs, upon the prolificacy and abundance of the *Aphides* or green-flies, it is but just to observe, that the Roses appeared to suffer in no degree so severely by them as they did in 1846: *then* not a bud fairly expanded in the spring—all were disfigured. The infliction has fallen most severely upon currant-trees and beans; the latter have been smothered by the black Aphis or dolphin; the only entire exceptions witnessed by the writer were found in two large field-breadths, in rows 27 inches asunder, kept sacredly clean by unwearied hoeings till, in due season, turnips were sowed between the ranks: these beans were beautiful, and have been harvested with a rich and most abundant crop on them.

There is no particular rule without exception; but there are many valuable general rules which admit of little deviation: thus, *tillage* to a great depth secures ample moisture to counteract the effects of aridity in the driest seasons; *good drainage* acts in accordance, although it removes superfluous water; *cleanness* not only promotes vegetation by destroying intrusive weeds, but it disturbs grubs and the larvæ of insects. All the operations of high, prolific gardening, of surface culture, and of order, depend upon these general principles.

We are the less scrupulous to introduce these general remarks, although they deviate from the strict floricultural character of the Magazine, because they bear upon the philosophy of scientific culture, whatever be its object.

In no one thing is the astonishing variation of conditions more apparent than in the thermometric readings off and registers of different local establishments. As a matter of curiosity, and also with a view to encourage comparative experiments, the following series of three daily observations in as many situations are copied, and thus brought before the eye at a glance:—

State of the Thermometer as observed during the week ending July 28*th and* 29*th*, 1847, *in three different situations.*

1. AT CHISWICK.				2. AT CROYDON.			3. AT OLD KENT ROAD.			
	Max.	Min.	Mean.	Max.	Min	Mean.		Max.	Min.	Mean.
Friday 23	74	44	59	71	56	63·5	Thursday 22	72	60	66
Saturday 24	76	53	64·5	66	55	60·5	Friday 23	72	53	62·5
Sunday 25	67	46	56·5	65	59	62	Saturday 24	72	52	62
Monday 26	75	45	60	69	55	62	Sunday 25	68	57	62·5
Tuesday 27	81	50	65·5	72	56	64	Monday 26	72	55	63·5
Wednes. 28	77	57	67	72	58	65	Tuesday 27	76	53	64·5
Thursday 29	88	54	71	79	61	70	Wednesd. 28	75	55	65

These tables, extracted—No. 1, from the *Gardeners' Chronicle* of Saturday, 31st, and No. 3 from the Regent's Park register, by Mr. White, who resides in Old Kent Road; will exhibit the great differences that exist in localities not very remote. No. 2 stands intermediate, and proves, that at 10 miles south of London, the lowest temperature by night, and the maximum by day, exhibit none of those extremes which characterise the "readings-off" of the Chiswick thermometers. We thus obtain convincing proofs that solar heat and terrestrial radiation produce varying effects, and that much dependence cannot be placed upon local tables. In gardens, a thermometer ought to be laid on the grass, another some distance over it, a third with a muslin shade strained some distance over it; and, thus proceeding, a few more facts may be ascertained.

ON THE CULTIVATION OF SOME OF THE PLANTS BELONGING TO THE GENUS IXORA.

Those who have been, or are at the present time, successful in the management of the plants constituting this splendid genus of stove plants, can scarcely believe it credible that the Ixoras, by the great majority of culturists, should be regarded as plants of difficult cultivation. Yet such is the fact; for, go where you will, and except under the management of some of the principal contributors to the metropolitan exhibitions, you will rarely see a plant well grown, and still more rarely well bloomed. Now, the reason of this is, not so much the result of want of attention, as over-care. Somehow or other the general, but at the same time most fallacious, opinion is, that the Ixoras are plants of very delicate constitution, requiring very tender treatment at all times, and in every situation; and hence, like delicate children, are so nursed and coddled, as, ultimately, to be nursed to death. Unfortunately the Ixoras, like many other good plants, have many enemies, and are so much infested with insects of all kinds as literally to be worried to death by them. Red spider, thrips, aphides, mealy bug, brown scale, white scale—in fact, every kind of insect which infests the hot-house—are at home on the Ixora; and to eradicate these the plants are so scraped, scrubbed, sponged, and doctored, as to be almost constantly under treatment for that purpose, by which they are so much injured as rarely to produce a healthy branch or entire leaf; and consequently, as the production of roots is governed by the production of branches, the plants are generally short of the former, and are very susceptible of injury from that great bane of good gardening, injudicious watering.

In the spring of the present year, the writer visited the collection of a gentleman who had some very beautiful plants of *Ixora grandiflora*, several of which, though by no means large plants, would have produced from twenty to thirty fine heads of bloom, had it not so happened, that a careless man was set with a short stubby brush to wash the mealy bug from the points of the shoots around the bloom buds, in which they generally congregate, and so effectually did he execute his duty, as either to totally destroy, or so much injure them as to render the plants of no use whatever for the season. Thus, it will be seen that, apart from the plants being treated unnaturally, that is, too much nursed, the great enemies of progress are insects; which either must be thoroughly eradicated when the plants are young, or be a constant source of trouble and vexation ever afterwards. Now, we do not say it is impossible to eradicate the mealy bug and scale on large plants; as hot water at a temperature of from 100 to 150 degrees, thrown on the plant in the open air, through a fine syringe, when the plants are in a comparatively dormant state, will do much to destroy them, as will also "Hereman's Dilutium;" but when the young brood gets into the interstices of the bark, and among the young shoots and flowers, it is next to impossible to get rid of them.

From the preceding remarks it will be seen how necessary it is to guard against insects; and those who are about commencing the cultivation of these, or any other stove plants, had better give gold for young clean plants, than even accept larger plants at a gift, however valuable they may be, unless they are perfectly clean. When a collection is once clean, there is some pleasure in its management, but to be constantly bug-hunting is a most irksome task. Plants purchased from the nurseries should also be treated with suspicion; indeed, it is a good plan to make all plants perform quarantine until you are convinced they are quite clean; and for this purpose they should be placed in a pit or corner of the stove, and closely watched, until you are quite sure they are free from insects.

The *Ixoras* are all natives of tropical climates, most of them coming from the East Indies and China, and some of the more recent acquisitions from Borneo, Java, &c. We have no positive information as to the altitudinal position which they occupy in their native forests; but judging from the treatment which best suits them in this country, we suspect they abound more as undergrowths in comparatively low situations than they do on the open plain, and hence they ought never to have been treated as dry stove plants, but during the growing season, should have been kept in a situation where, while they had a free circulation of air, the atmosphere was at all times in a comparatively moist or saturated state. In this country, during the time they are making their growth, no situation suits them so well as that of a good dung-pit or frame, where, with a gentle bottom heat and a free admission of air both night and day, they grow in a most satisfactory manner. Indeed, after all that has been written about the different systems of hot-water and hot-air heating, not even excepting that modern discovery yclept "Polmaise," which modern theorists and would-be philosophers pronounce the *ne plus ultra* of perfection as a means of heating for horticultural purposes, we have yet to discover a plan which is superior to the pristine dung-bed or pit, and by means of which so many plants can be grown to such perfection as they can by its influence. Go to any of our first-class cultivators, even those who have all the appliances of hot water and "Polmaise" to boot, and ask them the best means of heating a pit for plant-growing, and they will recommend the old dung-lining; inquire the best place to recover a sickly plant, and they will reply—the dung-pit; thus proving that after all the dung-pit, when properly managed, is the best place in which to manufacture first-class productions of either plants or fruit.

We do not say that good plants may not be grown without dung-heat, as that would be contrary to fact; but we do say that, however fine the plants produced without its aid may be, the same cultivator, by properly directing the influence of fermenting dung, would produce much finer things; and so thoroughly convinced are we of this, that, notwithstanding the extra trouble, we should always recommend a pit and frame or two to be heated by dung, in which to perform some of the more delicate operations of plant cultivation.

With these preliminary remarks we shall proceed to the cultivation, in full detail, of *Ixora grandiflora*, or *coccinea* as it is commonly called, and then offer such remarks on some of the best of other species as their proper treatment may render necessary. The *Ixoras* may all be propagated by cuttings of either the young or old wood, either of which will strike root readily in a close moist dung-heat of 70°; but when it can be procured, as in the case of cutting large specimens down, the old wood is to be preferred, making choice of those short, stubby, and comparatively stunted branches which have several joints crowded together, and which will produce five or six branches where a young shoot would only produce one or two. Cuttings of this kind have generally latent buds at the base or collar, which, after the plants are well established, throw shoots from beneath the soil, and therefore make very dwarf and compact plants, just such as are required for converting into first-class specimens. The *Ixoras* may also be propagated by grafting, a practice pursued, especially among the Continental nurserymen, to increase new and expensive kinds; but the plan is a bad one for the cultivator, inasmuch as he loses all chance of shoots from the base of the plant, the importance of which have been stated above. Such plants purchasers should avoid, as they should, also, plants propagated from cuttings which had only one joint; that is, when cuttings are scarce, some people, for the sake of getting more stock, instead of striking the cuttings by the usual plan at a joint, strike them in the internode between the joints, by which means a branch with six joints may be converted into five cuttings instead of three, as would be the case when two joints are retained to each.

Supposing then that you have "caught your plants" and that they are of the right kind, the next thing will be to prepare a dung-bed, or pit, precisely in the same manner as you would for growing melons or cucumbers; of course omitting the soil, and placing a thin layer of cinder ashes over the dung instead. Then procure some good strong turfy-peat, such as is found on Wimbledon Common, and having divested it of the very sandy portion at the bottom, break it into pieces of from half an inch to an inch in diameter. To this add plenty of good gritty sand, with some charcoal and potsherds, broken small, and mix all well and intimately together. Then take the plants, and supposing that it is the 1st of February, and that they are well established in 48-sized pots, remove them into 24's, using the above compost, and making the soil tolerably firm around the old ball. After this they must be placed in the frame, with the pots partly plunged,—of course, guarding against burning, or indeed over-heating the roots. Keep the temperature at about 60°, with a little air, but allow it to rise to 70° in the day time, or to 80° or even 90° on bright sunny days; shutting the pit up early in the afternoon, but always giving a little air throughout the night. In such a situation the plants will soon begin to make root, and as soon as they appear to be established stop each shoot, by pinching or cutting out the leader, and either peg or tie them down, horizontally, over the surface of the pot. This treatment will induce them to push several shoots from each branch, as well as from the base of the principal stem, and by repeating it several times throughout the season will make neat compact plants. By the end of April the plants will require to be removed into small 12-sized pots, using the same compost, and by the middle of July they may be put into 8 or small 6-sized pots, which will be the last pot for the season. After the last shift the plants should not be stopped any more, but rather be allowed to ramble until they go gradually to rest in October, the object being to produce roots ready for action in the following season. Manure water, in a weak and clear state, must be applied to them, about once in ten days, throughout the growing season, but more especially where the pots are tolerably full of roots. From October until the following spring they may be kept in a cool part of the stove, guarding against insects, and keeping the plants tolerably dry.

If first-class specimens are desiderated it will not be advisable to allow the plants to bloom until the third season, and hence, in the second season, they may be started early again, so as to give them the advantage of a long season of growth. Prepare a dung-pit, and start them, in the same manner, about February, and as soon as they show signs of growth stop each branch boldly in, and tie them out as in the preceding season. When the plants have made shoots about an inch long, re-pot them into 4-sized pots, still using the same soil, with the charcoal and potsherds in rather larger pieces. After this shift, the pots should be plunged about half their depth, guarding against over-heating, and also against the ingress of worms. Maintain a lively growing temperature, by renewing the linings of the pits when necessary, and keep a moist growing atmosphere. Allow the plants to grow wildly throughout the summer, and by giving plenty of air, both night and day, and abundant room, with liquid manure when necessary, encourage them to make strong, sturdy growth. The plants, if allowed, will produce some very fine flowers the second season, but as that would retard their growth to some extent, it is advisable not to allow them to bloom until the third year.

By the middle of August the plants, if they have been properly managed, will be large and strong; but as you must endeavour to get them as bushy as possible, it will be necessary to cut each shoot in again, and depress the side branches so as to induce them to break from the old wood. These will be the blooming shoots for the third season, and therefore to get them strong, so as to ensure their setting bloom buds, they must be exposed to as much light as possible, and at the same time receive every aid which practice can suggest to make the young growth strong and healthy. Maintain a brisk growing temperature, so as to have a thorough circulation of air at all times. As soon as you perceive the shoots begin to set their bloom, which may be known by the points of the shoots ceasing to elongate, and becoming full and large, begin gradually to lower the temperature so that through the winter they may be kept at a temperature of from 50° to 55° or 60°.

In starting them in the spring of the third year it will be necessary to give the plants a small shift, and introduce them to stove heat from the middle of February to the first week in March, that is, if you want them to bloom in May and June; but for later blooming, they must be in a low temperature until April or May. During the blooming season supply them liberally with liquid manure, but take care that it is neither too strong nor too muddy. A very weak solution of nitrate of soda imparts a very healthy appearance to the plants if applied occasionally, and we imagine gives colour to the flowers.

The annexed vignette gives a representation of an *Ixora grandiflora* in the third season of its growth, and was taken from a plant in the collection of James Cook, Esq., of Brooklands, Blackheath Park, whose gardener, Mr. Ayres, showed it at several of the metropolitan exhibitions, where doubtless some of our readers may have observed it. Unfortunately, our drawing only shows a part of the plant and flowers, as it was quite round, and equally well covered on all sides. It produced upwards of sixty heads of bloom, and had between thirty and forty fully expanded trusses when our sketch was taken. Such a plant we consider well repays any attention which may be devoted to its cultivation, as it is not only a grand object in itself, but continuing to bloom for several months, fills a place very worthily in the stove, and charms us for a long time.

After blooming towards the end of August the plant must be again cut in, and receive the same treatment as in the preceding autumn. Give a small shift at the time of introducing them into heat, every spring, and do not forget the weak manure water. So long as you can keep the plants shifted, they will continue to bloom; but when they get into the largest-sized pots they may be regarded as mere cumberers of the house; and after blooming, had better be thrown away. Such is the treatment pursued uniformly with exhibition plants of *Ixora grandiflora.* They may be bloomed in a much smaller state, indeed a dozen or two of small plants, bloomed in 48 or 32-sized pots, are very useful for decorative purposes, especially where plants are required for the drawing-room, and may be had with very little trouble.

Next in importance to *I. grandiflora* comes *I. crocata,* a plant of smaller growth and very profuse habit of blooming; in fact it blooms so profusely, that the chief difficulty in its management is to get the plants to make good strong shoots without blooming. Pursue the same treatment as with *I. grandiflora,* and keep the bloom pinched out until you get strong well-established plants, which will require two or three seasons to accomplish satisfactorily.

I. Bandhuca is much like *I. grandiflora*, but of more rigid habit, and is neither so good nor so easy to cultivate. *I. rosea* is very pretty and distinct, though not such a general favourite as the preceding, and may occasionally be caught with a very fine head of bloom, and then is very beautiful. *I. odoratissima*, a plant first bloomed in this country by Messrs. Lucombe, Pince, and Co., of Exeter, produced very large but loose trusses of deliciously sweet flowers, which make it very desirable; and *I. acuminata*, the white kind shown several years back at Chiswick by the same gentlemen, is also very distinct and desirable, but a very delicate grower.

Of new kinds, *I. hydrangœformis*, the new species from Borneo, introduced by Mr. Low, jun., of the Clapton Nursery, was shown, though not fine, in a sufficiently favourable state, by Messrs. Lucombe and Co., at the Royal Botanic Society's Exhibition in July, to show that under proper management it will make a first-class plant. It is a plant of very strong habit, and grows very freely, and we doubt not in a few years will be shown so as to merit the specific distinction of Hydrangea-like.

A very pretty species, resembling *I. crocata*, but much superior both in flower and habit, was shown by Messrs. Veitch and Son, of Exeter, at Chiswick, in July, and was called *I. Javanica*. It appears to be a very free-growing kind, and may be regarded as a decided acquisition.

All these kinds require nearly the same treatment, of course making allowance in shifting for those plants of delicate habit, and not potting them so heavily as the free-growing kinds. Above everything guard against insects, and then success is certain.

CULTURE OF THE GENUS HAKEA.

Of this genus of desirable New Holland plants nearly sixty species have been introduced, all of which are ornamental, and not difficult to cultivate. The best soil is a mixture of two parts heath-mould, and one part light sandy loam, broken together, but not sifted.

In potting, drain well with plenty of broken potsherd, and mix a few pieces of freestone, about an inch square, with the soil. These, by retaining moisture, will prevent the roots suffering immediately from drought, which they are very liable to do. Do not cramp the roots in small pots, for they invariably suffer when this is the case. Over-watering and drought are two extremes which these plants cannot endure. The roots being tender, water must be administered at all times with care, especially in the winter; drought, however, is more injurious than over-watering.

It is advisable not to follow the general usage of greenhouse plants, in placing them out of doors during the summer season, for three reasons:—

1st. They are liable to suffer from drought by exposure to the sun and air.

2nd. They are liable to perish from over-moisture by rain.

3rd. The roots are liable to be injured by the entrance of worms into the pots.

Propagation is effected both by cuttings and seeds. Cuttings are made of the ripened wood; plant them thin and shallow, in pots of fine sand. Place the pots on a dry, cool floor, and cover them with a hand-glass; water with great care, and in about two months they will have formed roots. If the pots be plunged in a hot-bed, or placed in a moist heat, success is very precarious.

When the cuttings are rooted, pot them off in small pots, and again place them in a similar situation and under a hand-glass until they have recovered, and begun to grow; then by degrees expose them to the air of the greenhouse.

Sow the seeds in March or April, cover thinly with light sandy heath-mould, and place the pots in a cool dry part of the greenhouse, where they will be shaded both from sun and wind; cover each pot with a piece of slate or glass, or cover them with a hand-glass, to prevent the soil drying too much, and by the following autumn they will be up. When grown sufficiently, transplant them singly in small pots, and place them under a hand-glass, as recommended for potted cuttings, until they have begun to grow.

THE GENUS GLYCOSMIS.

Amongst the good old-fashioned inhabitants of our stoves, which of late years have been displaced, to make room for new plants of a more showy character, may be mentioned the various species of *Glycosmis.* In how few collections any of these are to be found! indeed, it is not improbable but some of our readers may have altogether forgotten them; and yet, they are handsome good-sized shrubs, with deep green, shining leaves, disposed in threes and fives on a petiole; it is true the flowers are small, colourless, and inconspicuous, but this is partly compensated by their growing in axillary panicles of considerable size, and besides, they are exquisitely fragrant; and in addition to the above qualities, the plants bear (especially *G. citrifolia*) a profusion of small, red, sweet-tasted berries; they are, therefore, altogether certainly not to be despised as objects of beauty and interest.

There are but three species, at present, known to us; of these *G. pentaphylla* and *arborea* are natives of Coromandel and the Mauritius, where they grow in the woods to twenty feet, or more, high, and become loaded with fruit, about the size of our wild cherry, which is there much eaten by birds. *G. pentaphylla* was brought over to this country about the year 1790, and *arborea* in 1796. *G. citrifolia*, or, as it is often called, *Limonia citrifolia*, is a native of China, where it grows from four to six feet high; it was introduced about the year 1800. They all require the heat of the stove, and are very easily managed.

The best soil in which to grow these plants, is one-half rich loam, from a pasture, one-fourth leaf-mould, and one-fourth very rotten dung; mixed and broken together, but not rendered too fine. In potting, use pots rather large than otherwise, as the plants do not thrive well if cramped at the roots or often shifted. Immediately after being placed in larger pots, it is advisable to subject them to an increase of temperature with considerable humidity, until they have begun to grow freely.

They always require a good supply of water at the roots, but soon suffer if it stagnates; therefore give plenty of drainage, and, during the season of growth, they should be freely syringed over-head every fine day; this will greatly facilitate their development. It is also very advantageous to water them, once a week, with thin liquid manure.

Air is an indispensable requisite at the time the plants are in flower, for unless they are exposed in some degree to this, but few fruit will set.

Propagation is effected by cuttings, layers, and seeds.

Ripened cuttings are taken off any time of the year, except when the young wood is forming, and planted in pots of sand; plunge in heat, and cover with a hand-glass. In six weeks or two months they will be rooted.

When they are well rooted pot them off in the soil recommended before, but add one-fourth of heath-mould to it, on account of the plants being small, re-plunge them under glass, until they have again begun to grow, afterwards expose to a little air, by degrees, until they will, without drooping, stand amongst the ordinary plants in the stove.

For layers—branches merely pegged beneath the surface of the soil, without any incision, will strike root; but their emission is facilitated by an incision being made on the upper or under side of the branch; this incision should be made half way through the branch, and an inch long, sloping upwards.

Pots open on one side, from top to bottom, for the more ready introduction of a branch, filled with soil, and elevated on sticks to the desired height, are very convenient for layers of both this and other plants.

Seeds are sown in spring, and when up are potted off, and treated as recommended for cuttings.

NOTES ON THE MANAGEMENT OF HERBERTIA DRUMMONDII.

All the species of Herbertia are hardy greenhouse bulbous plants, and flower well in the open air during summer. *H. Drummondii* will endure the cold of our ordinary winters very tolerably, but is liable to perish from over moisture; it is therefore always better to include it amongst pot plants, which in winter are sheltered.

The proper season for potting is just before the bulbs begin to grow, after the season of rest. Turn them out of the pots, separate the bulbs from the soil, and after selecting the finest, replant them in small pots, four in each pot. The proper soil for their growth is equal parts of light sandy loam, heath-mould, and sand, mixed and broken together, but not sifted. After being potted, do not subject them to any heat, until they have grown considerably; for if this be done, they often grow weakly, and of course do not flower so fine. Any light airy situation will answer, where they will be protected from rains and frost.

When the leaves are considerably advanced, and the pots are beginning to be filled with roots, re-pot, and place them in a greenhouse or frame, where they will flower finely, requiring nothing more than the ordinary attention of hardy greenhouse plants, until after the flowering season.

When newly potted, and until they have formed good roots, water very sparingly; but as the plants advance towards flowering, increase the supply, and when in full bloom, water liberally. After the flowers fade, again diminish the quantity; and when the leaves become yellow and ripe, wholly discontinue it until after the season of rest.

As soon as the leaves are dead, place the pots in a cold situation again, where they will remain perfectly dry until the growing season returns, which will be in about three months after the tops are decayed.

As stated above, the species will thrive and flower well, if planted either in a frame or in the open border; but if it is grown in the latter, it will be necessary to turn a flower-pot over the bulbs during the season of rest, to protect them from wet. When planted in the borders the bulbs should not be disturbed oftener than two or three years. Propagation is effected chiefly by offsets, which are produced abundantly; but occasionally it matures seeds.

Sow the seeds thinly in light soil at the same time as tender annuals, and plunge the pots containing them in heat, to bring them up as early as possible; and when up place them in a cooler and more airy situation, to prevent their growing weakly.

Until the seeds begin to grow, administer no water, unless the soil becomes very dry. As the plants advance in growth increase the supply; but when the foliage begins to change colour, diminish the quantity until the leaves are wholly dead.

When the leaves are totally dead, and before they break off, turn out the soil from the pots, select all the bulbs, dry them on a shelf or other situation, and put them in a paper bag until the season for planting again returns.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR AUGUST.

Abelia floribunda. A greenhouse plant, bearing its lovely flowers during the spring months, and continuing a long time in great beauty. The species has attracted much attention, and has been exhibited at the horticultural shows with the generic name variously written, and sometimes corrupted into *Russelia.* It grows between two and three feet high, and the flowers are tubular, from two to three inches long, of a purple red, and are produced at the extremity of the branches. —*Bot. Mag.*, 4316.

Æschynanthus speciosus. This is unquestionably the most beautiful species of Æschynanthus yet known to us. Mr. Thomas Lobb, from whom the seeds were received by Messrs. Veitch and Son, detected this plant in Java, on Mount Asapan, near Bantam, attached to the trunks of forest trees. It requires the same treatment as tropical Orchidaceous plants. The flowers are between three and four inches long, full orange, with the extremity scarlet.—*Bot. Mag.*, 4320.

Cattleya bulbosa. Brazil is supposed to be the parent of this exquisite little species, but it is not certain. It belongs to the same section as *C. Aclandeæ*, from which it differs in its having much larger lateral lobes to the lip, a very differently formed middle lobe, and flowers of quite another colour. It may also be compared with *C. pumila*, which should be placed in the same section. This very pretty epiphyte should be either fastened to a block of wood, with a little sphagnum, or placed well elevated upon a pot filled with one-third of broken potsherds, and the remainder with the rough fibre out of peat soil, and half decayed leaves, in nearly equal portions, and afterwards placed in the lightest, coolest, and driest part of the Orchid-house. It requires but little water, even in the growing season, as plenty of moisture for Cattleyas may always be obtained by pouring water over the shelves and footpaths; as for the smaller kinds, they should never be syringed overhead. It is best increased after it has begun to grow, and not, as is generally done, when in a dormant state.—*Bot. Reg.*, 42.

Dryandra carduacea angustifolia. A Swan River species of *Dryandra*, discovered by Mr. Drummond, and reared in the Royal Gardens of Kew, from seeds sent by that indefatigable and most successful botanist. It flowers in the spring months.—*Bot. Mag.*, 4317.

Forsythia viridissima. This beautiful Chinese plant Mr. Fortune describes as a deciduous shrub, with very dark green leaves, which are prettily serrated at the margin. A deciduous shrub easily increased by cuttings and layers, and bearing a profusion of bright yellow blossoms all over the shrub.—*Bot. Reg.*, 39.

Gastrolobium villosum. This fine orange-flowered shrub is a native of the Swan River colony, where it would seem to be common. It was first found by Mr. James Drummond, from whose specimens it was described by Mr. Bentham. Its introduction to notice, in the gardens of this country, is owing to Messrs. Low and Co. It promises to be a very pretty greenhouse plant, and will require the same kind of treatment as Chorozemas and similar plants. It should be potted in a mixture of sandy loam, peat, and silver sand. It may be increased by cuttings, bu the best plants are raised from seeds, which in most species are freely produced when the plants attain size.—*Bot. Reg.*, 45.

Liebigia speciosa. This is a lovely plant, well deserving the name of "*speciosa*," and, in its genus, equally worthy to bear the name of the most distinguished chemist of the present day. It was originally discovered in Java by Blume, and was imported from that island through the means of that zealous collector, Mr. Thomas Lobb.—*Bot. Mag.*, 4315.

Lonicera discolor. This is a fine hardy deciduous shrub, from four to six feet high, a native of India, from whence it has been recently introduced through the East India Company. It produces abundance of greenish white flowers about the beginning of June, and in September and October it has a profusion of large black berries. It is easily increased, either by seeds or by cuttings of the half ripened wood, treated in the usual way, and grows freely in any common soil which is not too poor.—*Bot. Reg.*, 44.

Leucothoe pulchra. A pretty plant, received at the Royal Gardens of Kew, from Mr.

Makoy of Liege, as a *Vaccinium* from Caraccas. It flowers, in a cool greenhouse, in May, and is equally handsome in foliage and in flower.—*Bot. Mag.*, 4314.

ONOBRYCHIS RADIATA. A native of stony hills, in the region of Caucasus, common about Tiflis, flowering in summer. It is a showy plant, conspicuous from its racemes of white flowers, with a central yellow spot. In our gardens it is a hardy, herbaceous perennial, which grows about one foot in height, and succeeds best when planted in a rich sandy loam, and in a situation which is rather dry, particularly during winter. It is increased by seed, and the young plants will not flower before the second season.—*Bot. Reg.*, 37.

OPHRYS TABANIFERA, and OPHRYS FERRUM EQUINUM. These two species of Ophrys were collected by the late Dean of Manchester, were figured a day before his death, and were to have been illustrated by himself. His brief and imperfect memorandum tells us that *O. tabanifera* was found by his collector Vrioni, near Clarentia, a low and swampy place. *O. ferrum equinum*, so called because of a horse-shoe mark on the lip, is from Corfu, where it was gathered by himself on the summit of the Garouna Pass.—*Bot. Reg.*, 46.

PENTSTEMON GORDONI. This charming species was raised by Edward Leeds, Esq., of Manchester, from seeds given him by Mr. Shepherd, of the Botanic Gardens, Liverpool, and which had been collected by Mr. Gordon in the valley of the Platte River, on the east side of the Rocky Mountains. In many respects it resembles the Pentstemon speciosus, an inhabitant exclusively of the Oregon territory, west of the Rocky Mountains; but that has much narrower leaves, a less leafy panicle, deeper coloured flowers, a larger calyx, and above all, the anthers and sterile filaments glabrous. It seems to be quite hardy, but is impatient of much moisture, and should be kept dry from November until February. It flowers in June, when the large sky-blue flowers render the plant a very beautiful object.—*Bot. Mag.*, 4319.

PUYA ALTENSTEINII; *var.* GIGANTEA. Some time ago this plant was received at the Royal Gardens of Kew, under the name of *Pitcairnia undulatifolia*, and was published by Sir William, under that name, at t. 4241.—*Bot. Mag.* The same was afterwards sent from Berlin, under the name of *Puya Altensteinii*; Messrs. Lucombe and Pince, of Exeter, have since flowered it, and it proves to be a truly magnificent plant, sending up a flowering spike five feet high, clothed with deep crimson bracts and yellowish white flowers.—*Bot. Mag.*, 4309.

SPIRÆA PUBESCENS. A small grey shrub, with little hemispherical umbels of pure white small flowers, having a slight fragrance. In habit it may be compared to a weak *Spiræa opulifolia.* It appears to be nearly hardy, grows about two feet high, and flowers freely in any good garden soil.—*Bot. Reg.*, 38.

SALVIA LEUCANTHA. This rare and remarkable *Salvia* possesses, in its numerous flowers, in the rich violet or lavender-coloured tomentum of the calyx, and the pure white of the corollas, a beauty which cannot well be represented on paper. It is a native of Mexico, from whence it was introduced to the Continent in 1825, and has now been first brought to the greenhouses of this country from a garden at Nice, by Lady Smirke, Great Stanmore, Middlesex, in whose collection it flowered in June, 1847.—*Bot. Mag.*, 4318.

TRICHONEMATA GRÆCA. Dr. Lindley regrets being unable to furnish particulars respecting two pretty *Trichonemes*, figured under the above head, which were collected by the late Dean of Manchester. One, the *T. subpalustre*, with blue and white flowers, was found at Salonica, and in the Ionian Islands; and the other, *T. pylium*, with white and yellow flowers, was found at Navarino.—*Bot. Reg.*, 40.

VIBURNUM MACROCEPHALUM. This beautiful plant exists in the Garden of the Horticultural Society, where it has flowered, having been received in June, 1844, from Mr. Fortune, who found it in Chusan and at Shanghae. Mr. Fortune speaks of it as follows:—"This noble species was also found in the gardens of the rich in the north of China, and will probably prove perfectly hardy in England. There is a tree of it in a garden in the island of Chusan, at least twenty feet high, which in the month of May every year is covered with its snow-white blossoms. When grafted it blooms on small plants in pots, and is not unlike a white Hydrangea, by which name it is known amongst the Chinese." It is certainly one of the finest hardy shrubs that have been introduced. Even in the greenhouse and in a pot its beauty is conspicuous. Hitherto it has been grown in a mixture of loam and sandy peat.—*Bot. Reg.*, 43.

PLANTS NEW OR INTERESTING, IN FLOWER IN THE PRINCIPAL SUBURBAN NURSERIES AND GARDENS.

Æschynanthus longiflorus. It will be found in our July number, that a plant bearing this name has been already noticed as introduced by Messrs. Veitch, of Exeter, but which is now named *Æ. speciosus.* We have again to claim attention to another species, also forwarded by Messrs. Veitch, which proves to be the true *Æ. longiflorus:* they received it from Mr. Thomas Lobb (their collector at Java) in plants under the name of *Lysionotus longiflorus.* It is described as one foot high, in dwarf forests, growing on trees at an elevation of from three to four thousand feet. They treat it as a stove plant, and find it of easy culture. The flowers are produced freely all over the plant in clusters, some holding ten flowers, averaging from four to six inches long, of a very rich crimson scarlet colour. The plant, when in good flower, must have a gorgeous appearance.

Browallia Jamesoni. A remarkable and very beautiful plant, its surface profusely decorated with bright orange and yellow coloured blossoms. It differs from all the species hitherto known as annuals, being a shrub, and very superior both in flower and habit. It was introduced by Messrs. Veitch and Sons, Exeter, and forms a prodigious acquisition to our gardens.

Cattleya citrina. In the collection of J. E. Schroeder, Esq., Stratford Green, we found this beautiful species blooming most luxuriantly, having eight flowers fully developed at once: it is grown on a log of wood, suspended from the roof of the house, and appears to succeed best when turned upside down. Mr. Plant says he has two very distinct varieties, one much larger, with the labellum all yellow, the other having a crisped margin of white. We do not remember to have seen a finer specimen, whether from the peculiar habit and glaucous appearance of the foliage, colour of its flowers, or the exceedingly fine state to which it is grown and bloomed.

Echinacea intermedia. Messrs. Backhouse, of Fishergate Nurseries, York, have just forwarded to us a specimen of this, the handsomest of the purple-flowered Rudbeckia tribe. It has a strong robust habit (quite hardy), rising from eighteen inches to two feet, the stem clothed with short bristle-like hairs, and marked with brownish streaks throughout: the leaves are scabrous, dark green, nearly heart-shaped at the base, verging towards the upper part to ovate-acuminate. The primary leaves are opposite, but assume an apposite position on the lateral floral branches. The flower is from four to five inches in diameter, of a bright reddish-purple or lilac, very gay-looking. It commences flowering in August, continuing until November, and appears to be one of the finest autumnal herbaceous plants.

Gompholobium sp. At the nursery of Messrs. Knight and Perry, several species of the above have been flowering abundantly, each differing, either in habit or flower, from the other. The first we have already noticed as flowering with Mr. Ayres, gardener to J. Cook, Esq., Blackheath Park. The second is called *G. splendens,* having very brilliant yellow flowers, and good habit. The third has deep yellow blossoms, with carmine spot in the centre, the back of the flower being a dark chocolate. The habit of the young plant is much like *G. polymorphum,* but as it ages it becomes considerably larger. The fourth is more shrubby, having pinnate foliage, fine and wiry: this species bears bright reddish-lilac blossoms, in clusters of eight or ten, and is a very free bloomer. It is called *G. venustum,* and will no doubt become a great favourite. The fifth is much akin to the above, being a decided shrub, though the foliage is smaller. It has bright yellow blossoms, and produces them in great abundance at the tip of every shoot. This variety is known particularly by the calyx being thickly covered with down-like hairs. When a fine specimen, well covered with bloom, from the peculiar brightness of its colour, it would be difficult to surpass its gay appearance.

Leschenaultia splendens. A very handsome and well-flowered specimen of the above was sent to the Horticultural Rooms by Messrs. Veitch and Son, Exeter. In habit, it has much the character of *L. biloba,* though the foliage is a little longer and curled inwards towards the stem. The inflorescence is of a most brilliant and pure scarlet, of the size and form of *L. biloba,* but produced in clusters and great abundance at the end of each shoot. We noticed a much finer variety, the flowers larger and richer in colour, blooming with Mr. Ayres, gardener to J. Cook, Esq., Brooklands, Blackheath Park, Kent.

Sobralia macrantha splendens. A remarkably fine and richly-coloured flower has lately been showing its beauty in the Nursery of Messrs. Rollisson, Tooting, Surrey. It differs from

S. macrantha, particularly by the flowers being more compact and substantial; the colour, too, is far richer. The plant is more dwarf, scarcely reaching two feet high, and many of the stems producing flowers at one foot. This character, and the rich colour of the flower, will make it a great attraction to all cultivators, especially as it lasts a considerable time in bloom.

RHODODENDRON JAVANICUM. Messrs. Veitch and Son have recently flowered a superb species from the mountains of Java, nearly hardy, requiring merely protection from the frost, similar to that of the Chinese Azalea. It has bright orange flowers of good form and large size; the dried specimen sent with it shows that it produces them in large masses. The colour (we augur) will be a capital assistant to the hybridizer. The habit is far superior to any of the species, having a bright rich green leaf, smooth and flat, about five inches long and two broad, and tapering to each end.

VERBENA SEEDLING, *var*. We noticed this beautiful race in most luxuriant condition in the Nursery of Messrs. Henderson, Pineapple Place, Edgware Road, consisting of all the best varieties in cultivation, one plant of each growing in a border; we never saw such a gorgeous display of colour as they presented, each plant being a fine specimen. Among the finest and newest were the Empress Josephine, a blue variety; Mont Blanc, a fine white variety; Beauty of St. John's, a rose variety; and the Standard of Perfection, a salmon-coloured variety; all of which are worthy the attention of the florist.

OPERATIONS FOR SEPTEMBER.

THE period having arrived when out-door gardens will be in the greatest state of perfection, the aim of all the culturist's endeavours should be to keep them up to that standard, or as near to it as circumstances will permit. His efforts to maintain everything orderly, clean, and neat in the last degree, should be conspicuous, and should take precedence of many matters which may seem of more importance. Next to this, industry, good judgment, and attention to minute particulars, will effect all that is capable of being accomplished under ordinary circumstances.

In the parterre and flower-ground a chief object should be to keep up a display of flowers, and in aiming to do so, we should not be content to supersede beds of plants, or individual specimens which may be exhausted, or their blooming season over, by others that will blossom some time hereafter, but those we introduce should be in such a condition as that they renew the scene into which they are introduced. It is not an extraordinary provision, always to have on hand a store of things for the purpose of filling up vacancies, either on a large or small scale. Experience will best teach which are the most suitable plants for the purpose in question. Scarlet Pelargoniums, Fuchsias, Cuphæas, Verbenas, and many annuals, are excellent, and may be grown to any shape or degree of perfection in pots, and ever be kept ready to transport in full bloom to the flower-garden.

Notwithstanding much may be done by acting on the suggestions contained in the foregoing paragraph, it will be advisable to make the most of all flowers at this season; and nothing should be wanting, so far as their proper disposal is concerned, to show them off to the greatest advantage. Most strong and large-growing shrubbery-border and flower-garden blooming plants will have nearly attained their full dimensions; and therefore they will require well supporting; not only to prevent injury happening to them from rough weather, but also to enable them to develop in a superior manner their true characters, excellences, and beauties. Various Clemati and other climbers and twiners are delightful now; let everything be done to render them as characteristic as possible, and to bring out their native loveliness to the fullest extent. Pruning, where the production of ornamental effect is the object, is in many places a very considerable item of that to which the culturist has to give his attention at this season—it must have regard according as it is important or otherwise. Seed gathering, propagation in various ways; potting bulbs to flower in pots in winter, both in the open air and in the plant-houses; also planting them in the open ground, collecting composts, and soils, and many such matters, have all to be remembered now, and must receive the attention they require according to their importance.

With respect to raising a stock of flower-garden plants; since it is a business of first moment, and we have of late been endeavouring to bring it into notice as such, it will be sufficient here to observe, that the available season for striking these plants for furnishing the borders next year is fast passing away. Those persons, therefore, who have not begun this business, will do well to bear this fact in mind; and others who may yet have to complete their stocks cannot now afford to lose a moment's time. Make a list of everything that will be required, and plant sufficient cuttings, that when the young plants are stored away, winter losses may not leave a deficiency.

Autumn and winter-flowering plants, for the houses, &c., should now receive a due share of notice. Roses, pinks, and other plants, may be prepared to place in warmth, where it is desirable to have them in blossom in November and December; and Hyacinths, Narcissi, &c., should be potted for the same purpose. Amongst other things which we depend upon for an autumn or winter display of flowers, is a collection of Camellias. Ours at Chatsworth are finely set for bloom. These can be had in flower at any time from the close of autumn until the return of the following spring. As an almost perpetually flowering plant, and a very delightful one withal, we must not forget to mention the *Cuphæa platycentra*, figured in our Magazine at the close of last year. It is certainly a charming plant, and ought to be in the possession of all those who have accommodation for half a dozen, either in pots or in the open borders.

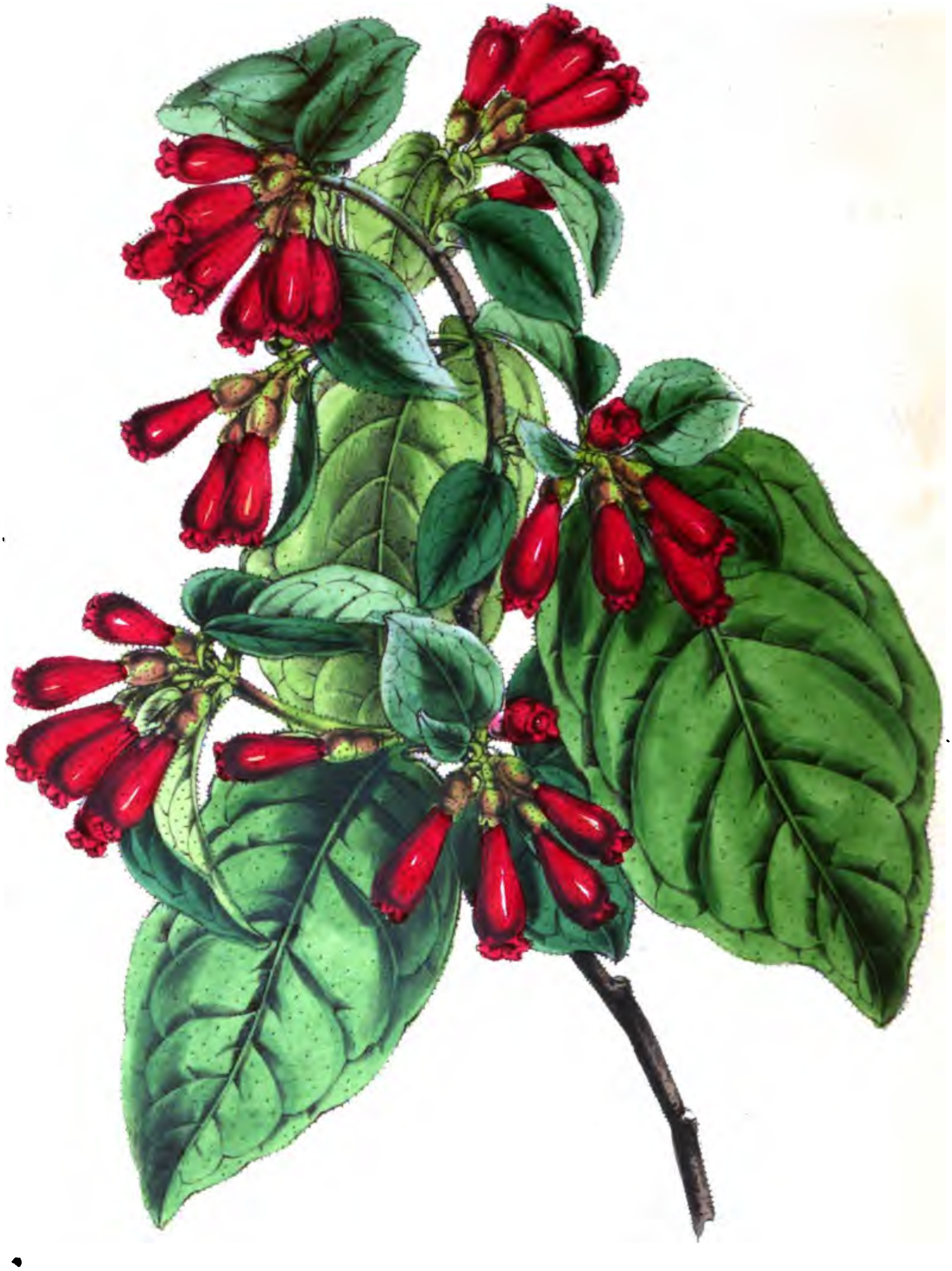
An opportunity should now be embraced to thoroughly *clean*, and, it may be, *paint* the woodwork inside all the glass erections, previously to their being filled again, or at least more fully occupied than at present, with plants. Measures of this kind greatly conduce to freedom from insects, as well as promoting the general good of the plants. Any of the more robust greenhouse plants, which may hitherto have remained under glass, may, if their growth is completed, have three weeks' or a month's full exposure to the open air, they will be rendered more hardy and better able to endure the dark and damp days of winter by this means.

Some, and indeed all, pot plants will be benefited by subjecting them more or less to a hardening process, according to their natures. Shade, regular waterings, and high temperature, must be forthwith gradually dispensed with in the case of the main collections, but growing plants must still continue to receive the treatment they require to develope their parts perfectly.

Stanhopeas and other strong-growing Orchids must be cautiously watered during the period they continue to grow, or much mischief, by damping, will in all probability ensue. Some of the finest Orchids, as *Cattleyas* and *Lælias*, will presently be in flower; let everything be done to enable the blossoms to expand perfectly, and to preserve them when expanded.

Carnations and plants of that description must be potted or planted in beds as they become rooted, and care should be taken that they are not planted in too rich a compost, or, during winter, they may probably perish.

Seed collecting and propagation amongst pot plants must not be lost sight of, and every leisure minute should be bought up for these purposes.



S. H. del. & lith.

Habrothamnus fasciculatus.

HABROTHÁMNUS FASCICULATUS.

(Cluster-flowered Habrothamnus.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
SOLANÀCEÆ.

Generic Character.—*Calyx* campanulate, five-toothed. *Corolla* hypogynous, tubular, and club-shaped, tube long, limb five-toothed, contracted at the mouth. *Stamens* five, inserted about the middle of the tube of the corolla, included; filaments simple. *Anthers* opening lengthwise. *Ovary* two-celled, placenta oblong, dissepiment adnate, many-seeded. *Style* simple; stigma capitate, indistinctly two-lobed.

Specific Character.—*Plant* a *shrub*, growing five to six feet high, downy. *Branches* round. *Leaves* petiolate, alternate, ovate-acuminate, entire, somewhat wavy; *petioles* short, fleshy, tinged with red. *Flowers* cymose, produced at the termination of each branchlet, fasciculate. *Floral leaves* three or four, situated immediately beneath each fascicle. *Calyx* small, tubular, somewhat coloured, cut into five erect, ovate-acuminate, fringed segments, or teeth. *Corolla* three times the length of the calyx, of a deep rich crimson colour, urceolate, tapering at the base, and contracted at the mouth; *limb* in five slightly spreading acute teeth. *Stamens* included. *Filaments* simple, and inserted below the middle of the tube. *Anthers* almost round. *Ovary* round, seated on a shallow fleshy disk. *Style* shorter than the tube. *Stigma* capitate.

Synonymes.—Meyenia fasciculata, *Schlecht.* Habrothamnus elegans, *Scheidweiler.* Cestrum roseum, *Hort.*

This beautiful hardy greenhouse plant is a native of mountain sides in Mexico, where it was found growing in company with *Gaultheria nitida*, *Cobæa stipularis*, &c., and formed a shrub of five or six feet high of most surpassing beauty.

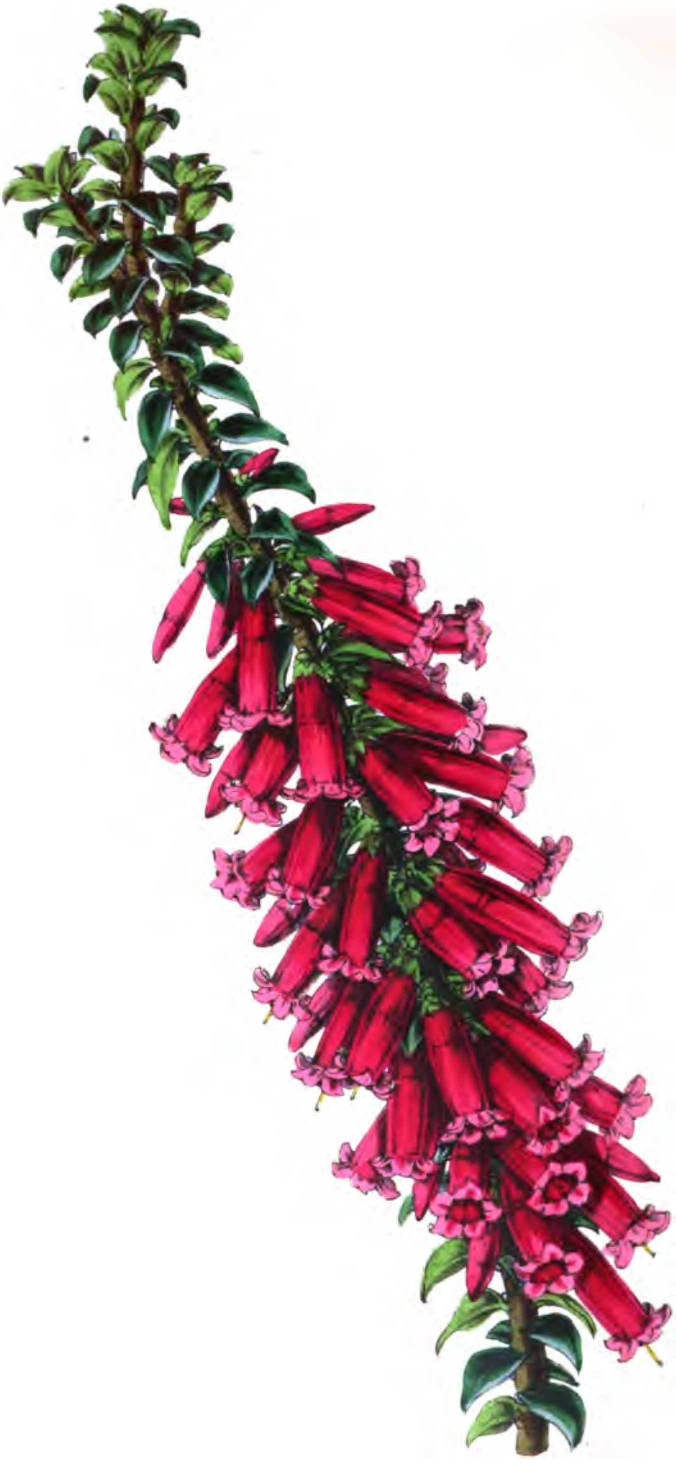
It was introduced from its native country to Belgium, by M. Van Houtte, Nurseryman, Ghent, about 1839, and from thence it found its way into the Nursery of Messrs. Lucombe, Pince, and Co., Exeter. It was also received into the Gardens of the Horticultural Society.

Although a free bloomer, in this country it has hitherto flowered only imperfectly. In its native habitats the flowers are produced in such quantities as to give the branches the appearance of a crimson wreath; and Hartweg describes it in his communications with the Horticultural Society as one of the gayest plants of the Mexican Flora.

It flowered at Chatsworth this last spring on the conservative wall, where it thrives well, and promises to make a fine plant. It also bloomed at the Horticultural Society's Garden, Turnham Green, where our drawing was kindly permitted to be made last April.

For the general cultivation of this species and *H. corymbosus*, see p. 112 of the present volume.

The name is derived from *habros*, gay, and *thamnos*, a branch, in allusion to the splendour of its flowering branches.



S. Holden del & Lith

Epacris Tauntoniensis.

EPÁCRIS TAUNTONIÉNSIS.

(The Taunton Hybrid Epacris.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
EPACRIDÀCEÆ.

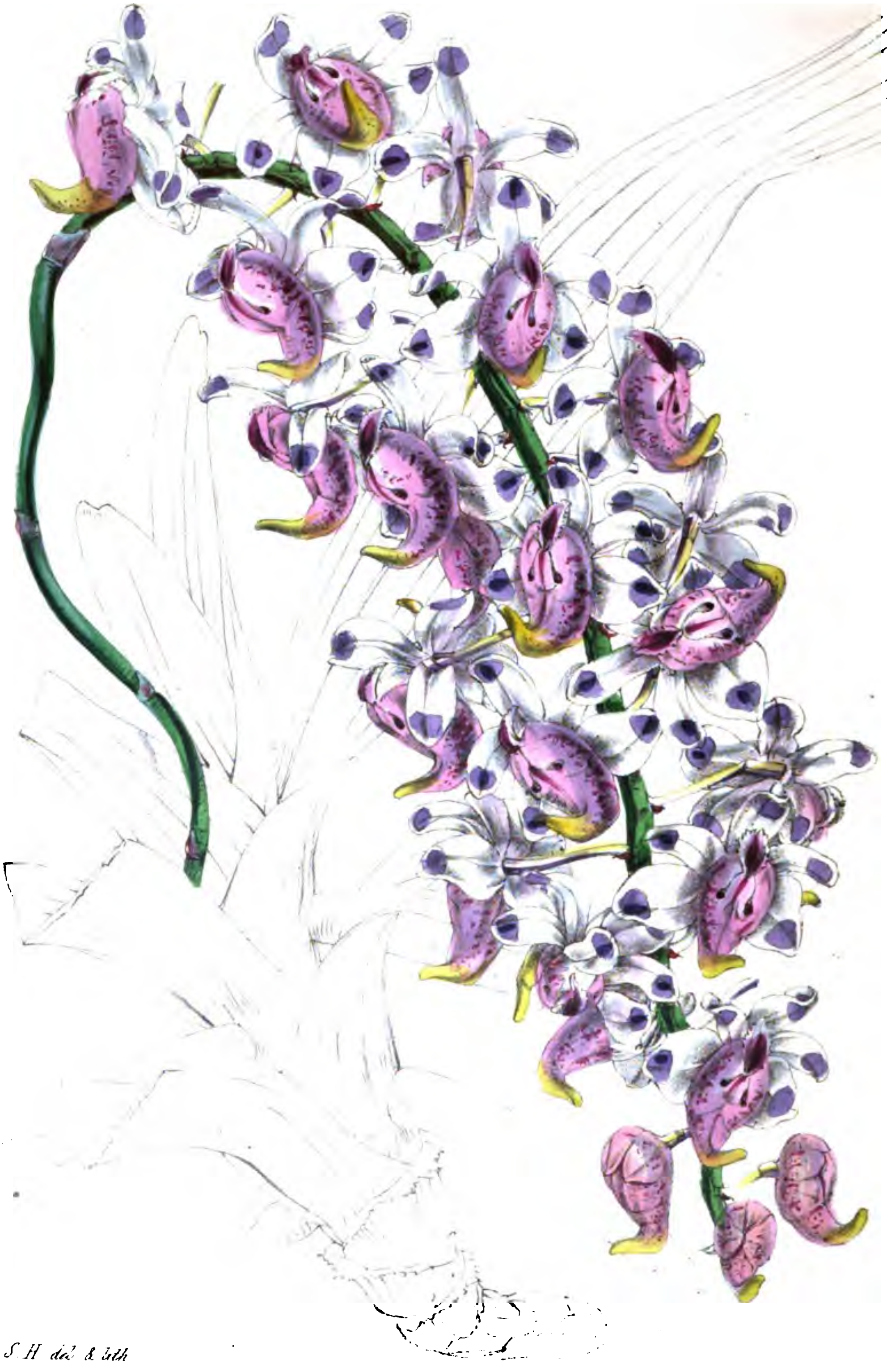
GENERIC CHARACTER.—*Calyx* coloured, many bracteate: bracteas of the same texture as the calyx. *Corolla* tubular, limb beardless. *Stamens* epipetalous. *Anthers* peltate above the middle. *Hypogynous scales* five. *Capsules* having the placentas adnate to the central column.—*Don*.

GARDEN HYBRID.—Epacris Tauntoniensis.

THIS very pretty free flowering hybrid Epacris was raised a few years ago by Mr. Ball, Nurseryman, of Taunton, betwixt, as we believe, *E. grandiflora* and *E. impressa*. It is certainly a very ornamental kind, and deserves universal distribution, being a robust free grower, a liberal brancher, and having a very prolonged flowering season.

On the culture of this genus of plants much has been said in former volumes of this work. However, it may be merely mentioned here, that this, and all the other strong growing kinds, are greatly benefited by a small addition of light sandy loam and well rotted leaf mould, being mixed with the sandy peat in which they are usually grown, and during the winter season, place them in as light and airy a situation in the greenhouse as possible, but carefully prevent their being injured by frost.

For the opportunity of figuring this pretty kind we are indebted to Mr. Ball, of Taunton, in whose nursery it flowered in December last, when our drawing was made.



S. H del. & lith

Aerides virens.

AÈRIDES VÌRENS.

(Dark-green leaved Air Plant.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

GENERIC CHARACTER.—*Perianth* spreading or closed. *Sepals* lateral, often oblique at the base, having a claw connate with the column. *Lip* with a claw, jointed to the column, saccate or spurred, three-lobed; lateral lobes short; middle one cucullate or awl-shaped, or shortly tumid, or partially arched. *Column* reclining on the ovary, short winged. *Anthers* two-celled. *Pollen-masses* two, furrowed at the back. *Caudiculæ* broad and filiform; gland peltate, subrotund.

SPECIFIC CHARACTER.—*Plant* an epiphyte. *Leaves* distichous, channelled, broad and thick, obtuse, and obliquely terminated. *Raceme* pendulous, many-flowered. *Flowers* fragrant, white, blotched and spotted with bright crimson-lilac. *Sepals* obovate, obtuse. *Petals* the same as the sepals. *Lip* large; lateral lobes medium size, denticulate at the top; intermediate one larger, somewhat furrowed, and denticulate at the top.

THIS beautiful Orchid has been an inhabitant of our stoves since 1842, when it was introduced, from Java, by Messrs. Loddiges, of the Hackney Nurseries.

There is a general similitude in the foliage of the plants of this genus, by which they are not, when out of flower, very readily distinguished from each other, but this species may be known by its leaves assuming a peculiarly rich and deep glossy green, hence the name *virens*.

The flowers are about the size of those of *A. cornutum*, figured in the "Botanical Register," for 1485, and they emit a peculiarly delicious perfume. The sepals and petals are of a clear French white, and each has a large, irregular, purplish-crimson blotch at the tip, and here and there a faint tinge of lilac. The middle lobe of the lip is marked with crimson-lilac down the centre to the full extent of the tongue, with paler denticulate edges, and the two side lobes are blotched with pale lilac, and spotted with bright crimson.

For attractive qualities, this species can be scarcely considered inferior to either the old *A. cornutum*, figured as above; *A. quinquevulnerum*, "Mag. Bot.," viii., t. 241; *A. Brookii*, "Mag. Bot.," ix., t. 146; *A. maculatum*, "Mag. Bot.," xii., t. 49; or any other species yet introduced.

A. virens flourishes in a very damp atmosphere during the season of growth, and is treated in the same manner as the other species figured in this work; namely, being attached to a rough block of wood by fine wire, the lower part of the stem, and a few of the roots also, enveloped in a small portion of sphagnum. It cannot bear intense light, and must therefore be securely shaded from the possibility of the sun's rays affecting it; and, with a high temperature, and plenty of moisture, by syringing and other means, it will grow with rapidity and flower freely.

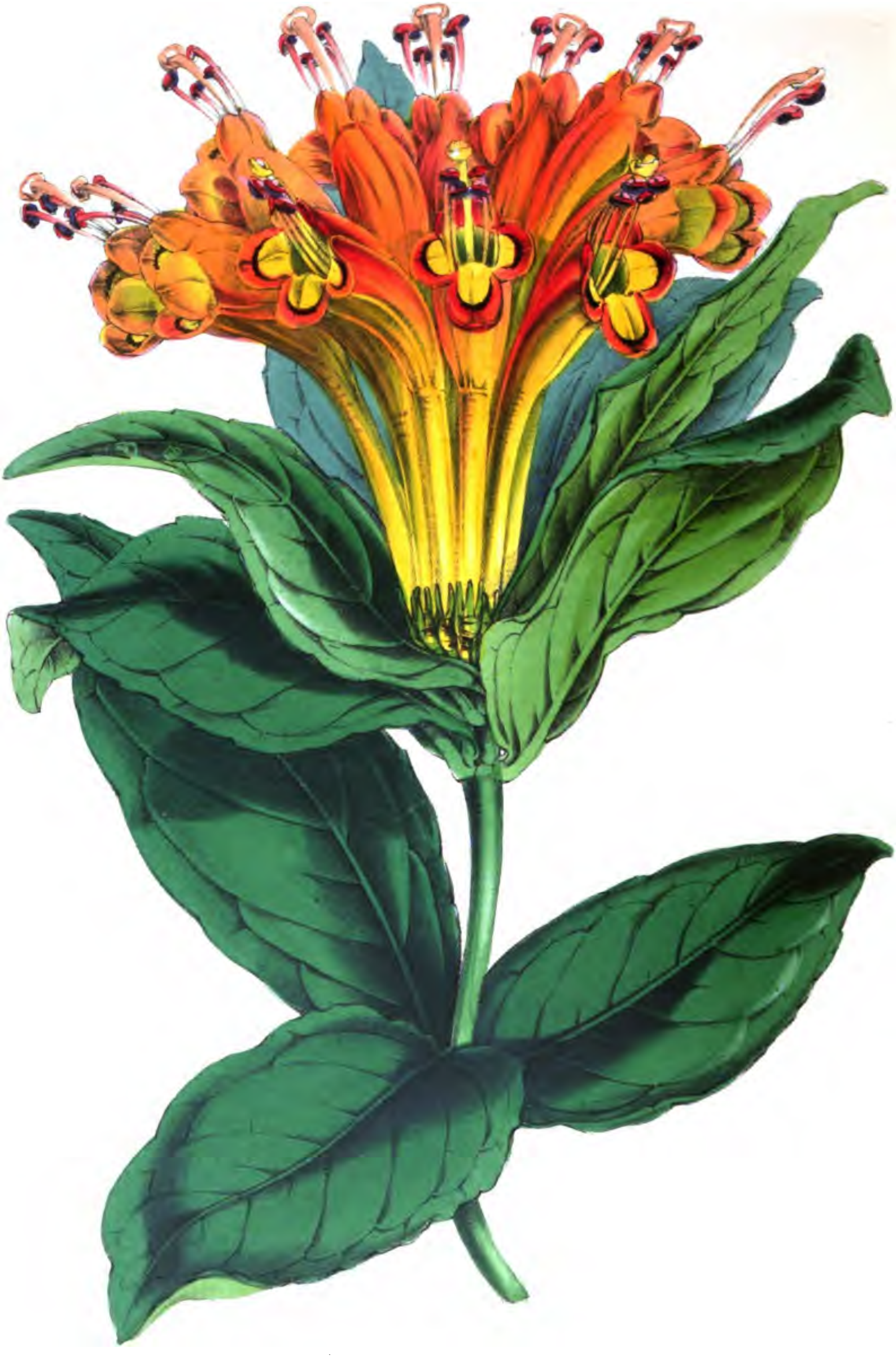
In winter, the removal of shade, a lower temperature, a drier atmosphere, and an almost entire suspension of water to the plant, will place it in a perfect state of rest until the following April, when it should be subjected to a warm, but dry, atmosphere, and in June be again introduced into a moist stove, as before.

In propagation, it is advisable not to separate any young branches until roots have protruded from them, and after separation, give the young plants very little moisture until they evince signs of growth.

Our drawing was made at the nursery of Messrs. Loddiges, in April last.

The generic name is derived from *Aer*, air, on account of its deriving so visibly its sole support from the atmosphere.

●



C. Jones del. [illegible]

Æschynanthus speciosus

ÆSCHYNÁNTHUS SPECIÒSUS.

(Showy Æschynanthus.)

Class. DIDYNAMIA. *Order.* ANGIOSPERMIA.

Natural Order.

GESNERÀCEÆ.

Generic Character.—*Calyx* ventricosely tubular, five-cleft. *Corolla* tubular, incurved, with a dilated campanulate throat, and an oblique, sub-labiate limb. *Stamens* four, didynamous, exserted, usually with the rudiment of a fifth; anthers at first conniving by pairs; cells parallel. *Stigma* excavated, somewhat funnel-shaped. *Capsule* long, siliquose, two-valved, falsely four-celled. *Seeds* small, generally scabrous, from papillæ ending in a bristle-like tail at both ends. —*Don's Gard. and Botany.*

Specific Character.—*Stems* about two feet long, according to Mr. Lobb; the lower part woody; the upper and younger *branches* subtetragonous and herbaceous. *Leaves* opposite or ternate, mostly nearly sessile, the uppermost ones beneath the flowers in a *whorl* of four to six or eight; the form is between ovate and lanceolate, acuminate, the texture very fleshy, the margin obscurely serrated. *Flowers* in terminal fascicles of from six to ten, and even twenty; large, handsome, showy, slightly pubescent. *Peduncle* erect, short, single-flowered. *Calyx* cut to the base in five deep, almost subulate, erect segments. *Corolla* between three and four inches long, full orange, with the extremity scarlet; the tube clavate, curved downward at the extremity, and there convex at the back, concave or canaliculate beneath (within glandular); the mouth oblique, four-lobed, the lobes patent, rounded, the upper one bifid; each lobe bears a lunulate black line, forming the boundary between the orange and red colour. *Stamens* and *style* exserted. *Ovary* linear, inserted in a fleshy gland or cup. *Stigma* transversely grooved.—*Sir W. Hooker, Bot. Mag.*, 4320.

Notices of this fine addition to our stoves were given in pp. 141 and 190 of the present volume of this Magazine. This is another of the introductions of Messrs. Veitch and Son, nurserymen, Exeter. It is a native of Java, where it was discovered, in very damp woods, attached to the trunks of trees on Mount Asapan, near Bantam, at an elevation of 2000 feet, by Mr. Thomas Lobb, who sent home living plants of it.

A fine specimen was exhibited at the Horticultural Show in Regent's Park, last May, where it was very justly admired as one of the finest species which has yet been introduced: the only one which can at all vie with it is *Æ. longiflorus*, a figure of which will be given shortly.

The foliage and manner of growth is not very unlike *Æ. grandiflorus;* the fascicles bear from twelve to fifteen blooms each, of a brilliant scarlet and orange colour, each blossom being about two inches and a half in length.

It is a very *free grower* and *bloomer.* Messrs. Veitch and Son have now a plant not more than six inches high, and several not exceeding a foot, just coming into flower, in their nursery at Exeter.

It is of easy culture, and may be potted in rough sandy peat, or, like all the other species, it will flourish in a mixture of reduced moss, rough peat, and potsherds. A wire, or open wooden basket, or a pot (provided the latter be well drained) will answer equally well. It may also be placed upon a block of wood.

It requires the heat of the stove, and during the season of growth, the plant should be frequently syringed, and freely watered at the roots; indeed the treatment in the growing season exactly corresponds with that given to tropical Orchids. When its growth is completed, moisture must be supplied less liberally: by this means, and a cooler temperature, the plant will be brought into a state of rest, when it should be kept comparatively dry and cool; indeed, the temperature of the greenhouse is quite sufficient whilst the plant is in a state of torpidity.

On the approach of spring, introduce it again into heat, but, for two or three months, administer very little moisture; by this means, when it is introduced again into a growing atmosphere, it will grow and flower with great freedom.

For the opportunity of figuring this splendid species we are indebted to Messrs. Veitch and Son, of Exeter.

GARDEN CULTURE OF TOBACCO.

THE subject of this article is somewhat out of date: it ought to have been introduced in March; but as it was then overlooked, we must now view it prospectively. Tobacco is of great importance to the gardener; it is one of those agents upon which he can place confidence, which never deceives him if he applies it with judgment, and at the right time; but it is very costly, and though to the man of property this is an affair of minor consequence, there are others who *feel* the outlay of 3*s*. 6*d*. or 4*s*. a pound that occurs several times in the year. Not, however, to dwell upon contingencies, it is our intention to prove by undeniable facts and evidences, that the economical gardener and amateur may furnish himself with a very excellent succedaneum, which, though its inherent qualities may not amount to more than two-thirds of those possessed by the best American Tobacco, are still very efficient, and are farther recommended by the great facility and light expense with which it can be obtained. By way of introduction, however, the following sketch is offered as containing a concise historical view of Tobacco.

The genus *Nicotiana* comprises about forty species, fourteen of which are contained in "Loudon's Encyclopædia of Plants," p. 136. It belongs to the *Solaneæ*, order cxliii. (Nightshades) of *Jussieu*, its colleagues in the tribe being *Solanum*, *Atropa*, *Datura*, *Hyoscyamus*, *Capsicum*, and *Physalis*. These "Lurids" (*Luridæ*) of Linnæus, are all of a suspicious sombre character; they tell of bane and poison, and truly the gardener acknowledges the destructive power of the herb, which can in a few seconds lay prostrate myriads of those "*Vastators*," which, if they fail to realise Mr. Smee's enthusiastic announcement, do most certainly prey upon, and utterly disfigure his best Roses, Pelargoniums, Calceolarias, &c., &c.

The term *Nicotiana* was derived from that of Jean Nicot, the agent of the King of France at Portugal, who there procured the seeds of the Tobacco from a Dutchman, who had obtained them from Florida. Nicot sent them to France in 1560. "The first plant was said to have been presented to Catherine de Medicis, whence the name '*Herbe de la Reine.*' The name Tobacco, which has superseded all others, is that of a certain district of Mexico. Petum or Petume (whence, evidently, our modern genus *Petunia* is nominally derived) is a Brazilian word."

There are two species of *Nicotiana*, which alone are worthy of the gardener's attention, for the purposes of washing and fumigation. The first, and earliest known, is *N. Tabacum*, introduced in 1570; the second, *N. rustica*, from which the Tobacco of Syria is prepared; both are annuals, and are raised from seeds. *N. Tabacum*, the real Virginian Tobacco, attains the height of 4 to 6 feet, if properly cultivated: its leaves are very large and expansive—the lower decurrent down the stem, the upper sessile, oblong, acuminate, and of a rich, yellowish green. When fully grown, in an open situation, and under the influence of a powerful mid-day sun, they exhale a very powerful odour of Tobacco, which is traceable at a considerable distance. This odour affords proof of the healthy condition and aromatic strength of the herb, as does also the large size and full colour of its pink, funnel-shaped flowers, that are borne on axillary shoots, and are very ornamental.

Before we detail the processes which, under our own management, were found to be successful, it will not be irrelevant to refer to the *culture of Tobacco in America*, as affording a standard of comparison which some persons may turn to advantage.

"The plants are raised on beds early in the spring, and when they have acquired four leaves they are planted in the fields in well-prepared earth, about three feet distance every way. Every morning and evening the plants require to be looked over, in order to destroy a worm which sometimes invades the bud. When four or five inches high they are moulded up. As soon as they have eight or nine leaves, and are ready to put forth a stalk, the top is nipped off, in order to make the leaves longer and thicker, by diverting all the energies of the plant to them. After this, the buds which sprout from the joints of the leaves are all plucked, and not a day is suffered to pass without examining the leaves, to destroy a large caterpillar which is sometimes very destructive to them. When they are fit for cutting, which is known by the brittleness of the leaves, they are cut with a knife close to the ground, and after lying some time are carried to the drying shed, where the plants are hung up by pairs upon lines, having a space between them that they may not touch one another. In this state they remain to sweat and dry. When perfectly dry the leaves are stript from the stalks, and made into small bundles, and tied with one of the leaves. These bundles are laid in heaps and covered with blankets. Care is taken not to overheat them, for which reason the heaps are laid open to the air from time to time, and spread abroad. This operation is repeated till no more heat is perceived in the heaps, and the Tobacco is then stowed away in casks for exportation."—*Encyclopædia of Plants.*

It has been stated above, that the Virginian species is to be preferred; the common "*green*," or *N. rustica*, with small and viscid leaves, must be rejected as worthless in this climate, and extremely difficult to dry and cure.

The Virginian, on the contrary, is a noble and very handsome plant, and the odour it diffuses under a hot sun leads to the conjecture that, if three or four were grown in large pots (No. 1,) of rich sandy loam, and retained in a conservatory or spacious greenhouse, they might act as a preventive of the aphis. The thought has casually occurred, and though no proof can be cited, it might be prudentially acted on.

Tobacco is equally tender and impatient of frost as the Potato, but if once brought into vigorous growth, it becomes firm and strong as the Sunflower. The seeds are small, and should be sown about the middle of March in a pan just below the surface of extremely fine soil, employing the gentle, rather moist warmth of a hot-bed or propagation house. The seedlings should be sprinkled or dewed with the finest rose of a watering-pot, and as they grow, must be thinned to regular distances.

When they have attained the proper substance and strength (which every good propagator well understands), they should be removed singly to the smallest pots of light-loamy earth, then watered and shaded in a warm frame till growth becomes thoroughly established. A removal into a larger size pot, wherein a firm ball might be formed, would, without any loss of time, be found very advantageous. Fifty fine plants would furnish a very ample supply of leaves for a moderate establishment.

Soil and future cultivation.—The plant will grow in any kind of ground, but as the gardener's object must be to produce a herb replete with highly laborated juices, it will be essential to select a place in the garden where the earth is a strong (not clayey) unctuous loam, deeply enriched by low-placed manure, and rendered open by a fine siliceous sand. We know that the organic products of the foreign Tobacco, grown in the hot districts of America, contain narcotic and poisonous properties, which are to a certain degree more feeble in the plants of our gardens; nevertheless, during our hot summers, such as those of 1842, 1844, 1846 and 1847, if the site lie well to the sun, leaves of great intensity will be produced between June and September. In the absence of any correct analysis of the chemical constituents, but judging from the slow and progressive combustion of the dry leaves—somewhat resembling that of weak touch-paper—it should seem that some nitrous salt is present in the organism. Hence, we would infer that *nitrate of soda* or *saltpetre* might appropriately be applied to the ground, but yet in quantity not exceeding half a pound to the rod of 30¼ square yards. The bed, or land for a single long row, being prepared, and somewhat settled, the plants are transferred with balls entire into holes made with a trowel about 18 inches to two feet asunder; the earth of each hole should be loosened by the tool, and the exterior parts of the roots of the plant carefully liberated prior to placing each in its hole: the soil must then be insinuated among the rootlets, made basin-form over them, and a liberal supply of soft pond-water given from a rose. It will be understood that the season of removal should correspond with that devoted to the bedding-out of ornamental plants in May, and also, that if the plants be from 6 to 8 inches high, strong, and vigorous in stem and leaf, the promise of success will be proportionately great.

We have never observed the caterpillar spoken of in the previous quotation, but there are depredators which call for a regular inspection; and moreover, if the season be dry, the gardener should be alert to give timely waterings, after which the surface soil should be moved with a hand-fork, to obviate any baking or incrustation that generally results from artificial waterings. Where there is plenty of room, as the Tobacco plant is very ornamental—quite as much so as the Digitalis—it will not be amiss to introduce it here and there, in sunny spots of the shrubbery or garden-plots, wherein tall plants are admissible.

Curing.—We approve of the removal of side-shoots, in order to divert all the powers of the plant, to the production and sustenance of expansive leaves, but cannot see any necessity for the destruction of the flower, at least of those at the summits, when growth has attained its maximum. However, the gardener should try experiments, and render himself master of his subject, taking ornament as well as utility into due consideration

We now presume that the leaves are fully developed, and perfected by the maturing sun of July and August; when, therefore, a little flaccidity and change of tint are discovered, all leaves so affected should be cut off, close to the stem, and the midribs pared off with a very sharp knife to nearly a level with the under surface of the leaf-plate. They are then to be strung and suspended in pairs, over a line stretched under an airy shed till the sap be carried off or absorbed. At that time the leaves will become dry and lax, but not by any means brittle; they are then to be rendered as flat as possible, and laid in that position in a box to which a lid is adapted that will exactly fit and drop in upon the herb. The practical man will soon discover that he must collect his leaves successively, because many will have attained the required condition long before the time when growth shall have ceased; however, enough will be collected to ensure a moderate degree of fermentation under a gradual pressure, which should be increased by an increased weighting of the superposed board.

As leaves so obtained have never yet been found sufficiently pungent, we have generally introduced a very small proportion of the most powerful "*returns*" Tobacco, aided by a few grains of finely powdered saltpetre, among the leaves at their final pressure. Thus, supposing 500 leaves to be collected by the end of September, and by gradual drying and pressure to have become pale brown, with a sensible odour of Tobacco, twenty ounces of purchased Tobacco, and one-fifth that weight of nitre, (*i. e.* four ounces), will suffice for the whole quantity; each leaf as it is laid straight and single in the boxes, receives its proportion of these materials. A little care and precision are required in this arrangement; but if the pressure and curing be carefully conducted in a dry room during winter, not a leaf will decay, and by the time that *Aphides* begin to intrude, a copious supply will be obtained, and of a quality sufficient for direct fumigation by the bellows, or to be burned in pots, and finally for the preparation of steeping liquor by infusion in boiling water.

Tobacco-paper may also be prepared by soaking the stoutest porous brown paper in this infusion, made very strong, and with the further addition of a little more saltpetre, just enough to produce a slow touch-paper when dried. This paper is exceedingly pungent, so much so as to be offensive to the eyes: it would therefore be prudent to burn it in pots, and not in the bellows. Whenever a steep liquor is prepared, the Tobacco remaining will not be lost; because, after being again dried, it can be used for fumigation, either in pots or otherwise.

SUGGESTIONS FOR THE MANAGEMENT OF PLANTS AND PLANT-HOUSES.

THE time has now arrived when those who have not already begun, will be making preparations for getting their tender plants into their winter quarters; and as, even among practical men, much diversity of opinion exists as to what constitutes good practice in the management of plant-houses, we suspect a few remarks at this season on the subject, will not prove unacceptable to many of our amateur friends. As remarked of flower-garden plants at p. 159, most of the plant collections throughout the country require a severe weeding, whereby they would be cleared of many hundreds of plants which now encumber them, much to the advantage of those plants which might be left. Fortunately, however, all plant-lovers begin to see the advantage of growing *selections* as distinguished from collections of plants; and the recognition of the principle, that good things well managed are capable of affording more real pleasure than great quantities of ill-managed, ugly, gawky plants, is now becoming pretty general. This of itself will do much good, as the more both gardeners and amateurs enter into the spirit of specimen-plant growing, the more will they see the necessity of giving house-room to such plants only as are really worthy of it, while the thousands of comparatively worthless plants which now crowd the lists of nurserymen, will be thrown to the rubbish-heap. We do not say that all these plants are unworthy of cultivation, as many persons of uncultivated taste may consider them very beautiful; but when we know that, without either greater trouble or expense, better and far more beautiful things can be grown—why not grow them?

Of what earthly use can it be to grow two or three hundred varieties of Camellia which some of the continental nurserymen profess to sell, when we know there are not twenty really first-rate kinds among them? Would it not bespeak better taste to grow the good kinds only, and, if a number of plants are required, duplicate with two or three of the best of each variety. Again, of Ericas, though in plant catalogues upwards of five hundred species are enumerated, and the nurserymen have almost as many varieties, who would think of growing that quantity for the sake of saying "I have every known kind," when we are aware that one hundred kinds would take the cream of the whole collection, and that with fifty more there would be very few left that a cultivator would care about giving pot-room to. If, however, selection is so much required among hard-wooded plants, still more is it needed among soft-wooded ones, such as Pelargoniums, Fuchsias, Calceolarias, Cinerarias, and the like. The varieties of these plants are almost innumerable, and, except to those who are always among them, almost indistinguishable.

Let us however hope the time is coming, when the importance of growing good plants only will be generally acted upon, and then we have no doubt the importance of growing specimens, as distinguished from the poor miserable wretches we too often see, will be generally recognised throughout the country, and not be confined almost to one or two localities, as at the present time.

These remarks are offered in connection with the management of plants and plant-houses, for the purpose of directing attention to the indispensable necessity of giving ample room to every plant; for without this, success in plant cultivation is impossible. We all know that if we plant a crop of cabbages too thick, or sow peas without allowing sufficient room between the rows to admit the sun and air freely among them, that we neither get fine cabbages nor yet good peas, because the plants being crowded together, do not get sufficient light and air to elaborate the juices properly, and consequently they are not only deficient in flavour, but also in those nutritive and life-sustaining qualities for which these vegetables are so much admired. Now plants cultivated in pots or under glass, though they may not produce edible fruits, obey the same laws of nature, and to bring them to due perfection, they must have an abundant supply of both light and air, and that not by fits and starts, but, if first-class cultivation is aimed at, regularly day by day. Hence specimen plants, whether in-door or out, should never be allowed to touch each other, neither should they be so placed, especially during the winter months, that they do not get a good share of light on all sides.

With reference to the influence of light, as connected with plant cultivation, it would appear that the *theory* of its importance is not borne out by practice, inasmuch as no decided improvement has resulted from its use; but, on the contrary, we know some of the best practical gardeners in the country are decidedly opposed to the use of sheet-glass. So far as our own experience enables us to judge, we have no great affection for it, and, except for its superior appearance and economy in repairs, we should not care much about using it. Singular as it may appear, it is not more singular than true, that nearly all the best specimens of both fruits and plants sent to the London exhibitions, are grown under common glass, and very frequently in heavy houses, seemingly ill-adapted for first-class cultivation. We have been growing plants under sheet-glass of the best quality for some time past, and we find that houses so glazed require much closer attention in changeable weather, and are very liable to scorch the plants if neglected.

Where houses are glazed with sheet-glass in large squares, they should be freely ventilated very early in the morning, especially in the early part of the season, and they should not be shut up so early in the afternoon as is customary with the common greenhouses. The ventilation of horticultural erections is a subject of great interest at the present time, and promises to occupy a good share of public attention. Those who have gleaned their information on this subject from their daily practice, know, as their fathers knew before them, how necessary it is to the well-being of plants, that there should be a constant interchange or renewal of the air in plant and forcing structures, not only during the day, but also during the night, and good gardeners take care to have a thorough circulation of it at all times and at all seasons when it is possible to admit it.

The disciples of the theory promulgated by Mr. Ward, in whose air-tight glass cases plants such as Cacti, Orchids, Ferns, and other Cryptogams, managed to drag out an enfeebled existence for many months, ran away with the idea some years back, that because these plants lived, other plants must grow, and consequently ventilation became a very secondary consideration among scientific men; indeed, we recollect a range of houses, the top sashes of which were all screwed down, and the result was, the black Hambro' Grapes became red ones in succeeding years, and the gardener lost his situation. To these houses air was admitted by holes cut midway between the glass and the footpath of the house in the back wall; but these holes we never reopened, except to lower the temperature of the house. Horticultural architects, who too frequently know nothing of practical gardening, soon took up the idea, because it was fashionable; and hence it would be easy to point to iron-roofed houses built about that time, which were so badly ventilated, as to render it impossible, without shading in sunny weather, to prevent the plants being scorched to death. This was one of the reasons why metallic-roofed houses became so unpopular, and were so much dreaded by professional men.

We have always laid it down as a rule, that plant and forcing-houses should never be closed during either night or day except in the most severe weather, but that "from night to morn, from morn to dewy eve," there should be a constant and perpetual interchange of the external and internal atmospheres. While, however, we would do everything in our power to secure this interchange, there are one or two things which must be carefully guarded against. We all know how very injurious it is to the animal frame to be placed in a current or draught, and that a current of air admitted through a broken window will lay the foundation of diseases which will quickly gather a strong man to his fathers. Scarcely less injurious are currents of air to plants, no matter whether they be warm or cold; and there are certain greenhouse plants—as, for illustration, *Boronia serrulata* and *pinnata*, *Crowea saligna*; the whole tribe of *Gompholobiums*, and many other Swan River and New Holland plants—which, if placed in a current, will not only refuse to grow, but will positively die. Even Heaths hate a current such as is admitted by the small opening of a sash, but they delight in a free circulation of air, admitted in a volume, so as to act upon the whole plant at the same time. No greater proof can be given of the injurious tendency of currents of air to plants, than the fact, that a current of frosty air admitted through a broken square will kill a plant in a greenhouse, the temperature of which shall never be below the freezing point, while the same plant, though frozen quite hard, but protected from a current, would be uninjured. This fact we proved several times during the last severe winter, and so satisfactory was it to us, that while we admit all the air we can to our plant-houses, we always take care to guard against strong currents.

From the preceding remarks it will be seen that the ventilation of plant-houses is an operation which requires careful management, and is a point in cultivation which it is necessary should be well studied. In congenial weather, of course, air can be admitted at any and every part of the house, but in severe weather it is necessary to exercise great caution. Of all the plans which have come under our observation for winter ventilation, that of admitting cold air by means of drains passing from the outside of the back wall under the house to the heating apparatus, and escaping upwards among the hot-water pipes, is the best; and if some wire gauze or perforated zinc be placed along every alternate light at the top of the house, the ventilation can be regulated with very great nicety, and without any fear of doing injury, so long as the heating apparatus is kept warm. The cold-air drains under the house should be of considerable size, not less than nine inches square, so that, in the case of ripening forced fruits, a large volume of fresh air can be constantly rushing in; and as the quantity of air admitted will be governed by the escape at the top of the house, no fear need be entertained of cold currents, so long as the back ventilators are properly regulated. Of houses thus arranged we have never closed the cold-air drains at any time during the last three years, and by strangers the atmosphere has always been admired for its fresh and wholesome feel. In these houses the lower pipe of the heating apparatus is laid in a tank, so that the air receives a necessary supply of moisture before it passes among the plants; and when we require a very moist atmosphere, it also passes through a coarse, moist, woollen net, which makes it all that can be desired for plant cultivation. Of course, this system of ventilation enjoins a waste of heat and an increased consumption of fuel; but that we do not care for, so long as we are sure we are benefiting our plants by the additional expense.

Some modification of this plan we should recommend to every one who is desirous of excelling as a plant cultivator, and we would particularly impress upon amateurs the importance of guarding against currents in their plant-houses, especially during the winter season. Taking the precautions previously pointed out, and guarding against over-excitement as to temperature, with due attention to watering, and allowing each plant plenty of room, and thorough cleanliness both in the plants, pots, stages, and houses, success is certain; but neglect any one of these points, and you will most assuredly and deservedly pay the penalty of your indiscretion before another summer dawns upon us. Next month we shall have something to say on the classification of plants in greenhouses, &c.

CULTURE OF THE GENUS LAGERSTRŒMIA.

THIS is certainly so splendid a genus of shrubs, that, taking it altogether, few can surpass it; the management of the species, also, when understood, is far from being difficult, although a person unacquainted with their habits would be very likely to come to a different conclusion.

There are only seven species known, all natives of the East Indies, China, and the neighbouring parts; six only of these have come under our notice as having been introduced; namely, *L. elegans*, *grandiflora*, *indica*, *parviflora*, *reginæ*, and *speciosa*. Of these, all except *elegans* are old inhabitants of our stoves, especially *indica* and *reginæ*, the former of which was introduced in 1759, and the latter in 1792: the others, with the exception of the one above-mentioned, have all been brought into this country during the present century.

With us, under proper management, they form deciduous shrubs and trees of some size and great beauty. Growing naturally within the tropics, the temperature of the stove is necessary to grow them to perfection.

L. elegans is now beautifully in flower in the large conservatory at Chatsworth. The plant in some respects resembles *L. indica*, but its growth is far more robust, its flowering season is later, and its whole habit, when the two are seen together, very distinct. The blossoms are produced in large leafy panicles at the extremities of the branches; they are large, rich rose-coloured and yellow, curled, and very showy. It is a native of the East Indies, and was discovered by Dr. Wallich. Introduced in 1841.

L. grandiflora.—This is another very gay species, bearing a profusion of rose-coloured flowers. The blossoms themselves are something larger than the last, but the panicles being less, they scarcely make so much show as those of *elegans*. It was found on the hill-sides, at Chittagong, in the East Indies, and was introduced here in 1818.

L. indica.—This has been the longest known to us, and is probably the handsomest of the whole; certainly no introduced species has yet surpassed it: its graceful slender branches, small bright green leaves, and large terminal panicles of showy rose-coloured curled flowers, render it an object which cannot be passed without admiration. It is a native of China and Japan, where it forms one of the most esteemed shrubs, growing eight or ten feet high.

L. parviflora.—This has perhaps the fewest attractions to recommend it to our notice of any of the kinds. The panicles are produced at the termination of the branches, and are many-flowered, but the flowers are small and white, and although pretty when examined, yet make but little appearance in a collection of plants. It grows on the mountain-sides of the Circars, in the East Indies, and forms a spreading shrub about twelve feet high. The natives are said to make use of its wood for various purposes. It was introduced into our stoves in 1818, but is now rarely seen in collections.

L. reginæ.—This is a magnificent kind, with fine terminal panicles of large rich rosy-purple flowers, and very spreading branches. It is a native of the woods of the Circars, in the East Indies, and also of Java and Malabar, where it grows amongst the rocks, and forms a tree about twenty feet high. It was introduced in 1792, but has been little cultivated for many years.

L. speciosa.—The flowers of this species are about the size of those of *L. indica*, rich rose-colour, and disposed in terminal racemes. They are very showy. The plant is a native of China, where it grows to a tree, twenty feet or more high; and was introduced into this country in 1826. It is far from being common.

The cultivation of the above species may be stated as follows:—

If the plants are intended to be grown in pots, the proper *soil* for them is *two parts* good sandy loam, *one part* sandy heath-mould, and one part well rotted leaf-mould: let these be well mixed together, but neither broken very fine or sifted. The pots must be well drained with plenty of potsherds, and it is advantageous to mix a portion of broken pots with the soil.

It is indispensable that abundance of *pot-room* be given, as the roots will in no case endure cramping; and it is not improbable but this has been one of the many causes of failure in the successful management of these desirable plants.

Bottom-heat is a very important item in their cultivation; the pots must therefore be set where they will receive a genial warmth either from a flue, hot-water pipes, or other vehicle for conveying that requisite. They will not, however, flourish long if plunged in a fermenting medium, chiefly because the roots are liable to perish from stagnant moisture. They thrive much the best, however, if *turned out* into the open border of a *stove* near to a flue, hot-water pipe, or any other situation where they can enjoy a brisk heat at the roots. In such a position they grow with unusual vigour, and produce flowers in the greatest profusion. The only soil requisite in such a place, is a good sandy loam.

During the *season of growth* they require a high temperature and great humidity. Syringe freely every day, and give an abundant supply of water to the roots. About the end of June this large proportion of water must be gradually diminished, although a good stove heat should still be kept up, and the roots must yet receive a liberal supply of water: this will form their flowering season.

About the end of September or beginning of October, the flowering season will be over, then gradually lower the temperatnre, and diminish the quantity of water to the roots, until by the beginning of November the plants will be brought into a state of rest, when, if they are grown in the borders of the stove, they may be kept perfectly dry during the whole of the winter months, that is, from November to February. If they are growing in pots, it is requisite to remove the pots from the exciting situations in which they were placed to grow, to one more temperate, but where however they will receive no moisture, except they show signs of great suffering for the want of it. If this rule be followed of keeping them perfectly dry through the winter, no fear need be entertained of losing them; for although the leaves all fall, and the plants look naked and withered, yet when spring approaches, they burst out again with renewed vigour from this temporary torpidity, and produce firm strong shoots three, four, or five feet long.

At the end of February or beginning of March, all the previous year's wood should be pruned according to its strength, to within a few eyes of the old branches; the stronger shoots to two or three eyes, and the weaker ones to within one or two eyes. When this operation is finished, the plants will have a naked stump-like appearance, but the vigorous growth which will follow this treatment more than compensates for the want of ornament and extra trouble which the performance of it entails.

When the plants are pruned, and begin to show signs of returning growth by the swelling of the buds, commence administering a small portion of water; but at first this must be done very gradually and with due caution, until the buds begin to burst. When these signs appear, if the plants are in pots, immediately repot them, giving abundance of root-room as before directed. After which, replace them in the places where they grew the previous year, and as the growth advances, increase the heat and moisture, and furnish them with every possible stimulant to render their development as rapid and as perfect as possible. By the end of June when this is completed, treat them again as recommended for the flowering season. They are increased pretty readily by cuttings of the half-ripened wood, which should be planted immediately after being separated, in pots of fine sand, and placed in heat under a hand-glass.

When rooted, pot them off in a mixture of light sandy loam, heath-mould, and leaf-mould, equal parts, and again place them in a close heat until they have begun to grow, then remove and treat them in the same way as the old plants.

CULTURE OF LIMSIA ANETHIFOLIA.

THIS plant is a native of New Holland, in arid situations, and was introduced in 1825. The best soil is a mixture of two parts heath mould, and one part light sandy loam only partially broken.

Drain well with plenty of broken potsherds, and mix a good portion in the soil in which the plants are potted; also a few pieces of charcoal and freestone mixed through the soil is not without its use. Give plenty of root-room in potting, for if the roots are cramped in too small pots they invariably suffer—often die.

The roots, although vigorous in their growth, will neither endure great drought or over watering; it is necessary therefore always to administer this element with caution. It is advisable not to place them out of doors during the summer season, as is the custom with other greenhouse plants, but let them have as much air and light in the greenhouse during the season as possible.

Propagation is effected by cuttings taken off when ripe, and planted thin and shallow in pots of fine sand. Place the pots in a cool, dry part of the propagating house, and water with the greatest caution. In about six weeks or two months they will have struck root; they may then be planted in small pots, and again placed under a hand-glass until they have begun to grow, after which they may be exposed to the air of the greenhouse.

CULTURE OF CONOSTEPHIUM PENDULUM.

This plant, like all the others of this natural order, will not bear crowding amongst other plants of a different habit; its foliage soon suffers; it is therefore advisable to place them in company with *Ericas*, Proteaceous plants, and others which require plenty of air and room for their delicate foliage.

If it be placed out of doors in summer, which is scarcely advisable, be particularly cautious that it stand in no situation either much exposed to winds or direct sunshine, or under the drip of trees.

Always pot before the roots have become closely matted, that is, as soon as they have spread moderately through the soil; by this means a vigorous growth will be sustained, and the plant meet with no check.

The soil most suitable is a mixture of three parts very sandy heath mould and one part light sandy loam; mix and break them together, but not too fine, and mix a few broken potsherds with it.

Give a large proportion of drainage, for if the water stagnates in the least, this plant cannot be kept healthy. On the other hand, the soil in the pots must never be allowed to become dry and baked, for either the extremes of over moisture or drought the tender roots are unable to bear.

Cuttings will strike root if planted in pots of sand, and placed under a bell or hand-glass.

FLORICULTURAL NOTICES.

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NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR SEPTEMBER.

Amomum vitellinum. The history of this plant is unknown. It flowered in the garden of the Horticultural Society in May last, and is supposed to have been received from the East India Company. It grows about two feet high, with oblong wavy leaves; and the flowers are deep yellow, strongly veined with red, growing in a short close spike, sessile among the uppermost leaves. It proves to be a stove perennial, requiring plenty of moisture and heat during its growth, but afterwards to be kept nearly dry. It flourishes in a mixture of sandy loam and peat, and is easily increased by division of the roots when in a torpid state.—*Bot. Reg.*, 52.

Dendrobium Kuhlii. This handsome plant is not unworthy to be placed by the side of its near ally, the beautiful *D. secundum*, from which it differs in having larger flowers, in short, lateral, few-flowered horizontal racemes. They are of a bright rose colour, and retain their freshness longer than is usual in this genus. It was introduced by Messrs. Veitch and Co., of Exeter, who received it from their collector, Mr. Thomas Lobb. It is a native of Java.—*Bot. Reg.*, 47.

Edgworthia chrysantha. This shrub was found by Mr. Fortune in Chusan, and by him was sent to the Horticultural Society in April, 1845. It is allied to *Edgworthia* (*Daphne*) *Gardneri*, a Nepal plant with a similar habit, from which it differs in having longer and more slender flowers, larger flower heads, and a much more silky hairiness on the outside of the flower. It is a greenhouse or half hardy shrub; growing freely in a compost of three parts sandy loam and one of turfy peat. A free drainage is necessary; for although it requires an ample supply of water during the summer months, it is liable to damp off if this point is not properly attended to. For a few weeks in winter very little water is required. Being sweet scented and a plant of free growth, it may be expected to prove a useful addition to our greenhouse or half hardy plants belonging to the natural order of Daphnads. In order to make it flower, the Chinese bind the stems so as to form a loop; and this practice has been followed with success in the garden of the Horticultural Society, where it produced its yellow flowers in the month of May.—*Bot. Reg.*, 48.

Epidendrum pyriforme. This very pretty little species was imported from Cuba by Messrs. Loddiges, with whom it flowered in January last. The leaves are unusually thick and fleshy, about four inches long, on little pseudo-bulbs, which look like inverted pears. Notwithstanding its diminutive stature, the flowers are fully two and a half inches in diameter, with reddish yellow sepals and petals, and a pale straw-coloured lip veined with crimson.—*Bot. Reg.*, 50.

Exogonium purga. This is the true Jalap plant; that is to say, the species of Bindweed which inhabits woods in Xalapa, in Mexico, whence the name; and where the tuberous purgative roots are collected, dried, and sent to Europe for medical use. The whole order of Bindweeds possess the properties of Jalap in a more or less marked degree; and if we do not employ the creeping roots, or the seeds, of the species that grow in our hedges, it is only because exotic plants are more active. In cultivation this should be regarded as a stove herbaceous climber, which grows freely in a mixture of sandy loam and leaf-mould in equal portions. After flowering it should be allowed to become gradually dry; and, eventually, may be placed (pot and soil) in a cellar or similar situation, where it is out of the reach of damp and frost, and where it may remain until the following April, when it should again be fresh potted and started in heat. It flowers late in the autumn, and requires a stove heat at that time, otherwise the flowers will not expand.—*Bot. Reg.*, 49.

Gardenia longistyla. Another beautiful white flowering Gardenia, from tropical Western Africa, where it was discovered by Mr. Whitfield. It flowered in June last with Messrs. Lucombe, Pince, and Co., Exeter; and is a handsome and most distinctly marked species with long flowers and a style twice the length of the corollas, terminated by a large globose stigma. It requires the heat of the stove for its successful cultivation, and does not seem shy of flowering.—*Bot. Mag.*, 4322.

IXORA GRIFFITHII. The ample foliage, the large compact cyme of very rich yellow and orange-coloured flowers, with the long slender tube of the corolla, and the almost orbicular segments, together with the blunt and short-toothed calyx, distinguish this from the numerous species hitherto known to us of the present genus. It was introduced from Singapore by the son of Mr. Low, of the Clapton Nursery, and has been, we believe, disposed of by him under the unpublished and scarcely appropriate name of *Ixora hydrangeæformis*. Its present name serves to commemorate its first discoverer, the late Mr. Griffith. It is a really noble species, and will prove invaluable to our stoves, where it requires the same treatment as our favourites of the genus, *I. coccinea* and *striata*: to both of which it is superior in the size of the inflorescence and the large leaves, some of which are a foot in length.—*Bot. Mag.*, 4325.

LISIANTHUS ACUTANGULUS. Seeds of this green flowering plant were sent to the Royal Gardens at Kew by Mr. Purdie. The plants were raised in a warm stove, and kept in a greenhouse during the period of flowering—the summer months. The species appear to be biennial, and is remarkable for the unusually green hue of the flowers.—*Bot. Mag.*, 4324.

MEDINILLA SPECIOSA. The genus *Medinilla*, remarkable for the beauty of the foliage, and the delicacy of the flowers, was established by Gandichand, in the Botany of Freycinet's Voyage, in honour of Don Josè de Medinilla y Pineda, Governor of the Marianne Islands, in which group the first species (*M. rosea*) was discovered. *M. speciosa*, as its name would imply, is among the most beautiful, and perhaps exceeds all the other species, in the fine panicle of delicate rose-coloured flowers, gracefully drooping from among the rich green and ample foliage. It is an inhabitant of Java, and is among the treasures of that island sent home to Messrs. Veitch and Son, by Mr. Thos. Lobb.—*Bot. Mag.*, 4321.

TROPÆOLUM SPECIOSUM, *Bot. Mag.*, 4323. See *Mag. Botany*, t. 173 of the present volume.

VIBURNUM PLICATUM. This plant is a native of the northern parts of the Chinese Empire, and was found cultivated in the gardens of the rich, by whom it was much admired. When full-grown it forms a bush eight or ten feet high. It is a most profuse bloomer, forming numerous heads of snow-ball flowers, like the common Gueldres Rose. It will, doubtless, prove perfectly hardy in England; and on account of its neat habit, will probably become a great favourite in our gardens. *Bot. Reg.*, 51.

NEW, RARE, OR INTERESTING PLANTS, IN FLOWER, IN THE DIFFERENT GARDENS AND NURSERIES IN AND ABOUT LONDON.

ACHIMENES *var.* A collection of seedling Achimenes have been forwarded from York by Messrs. Backhouse, all of them of the small *A. coccinea* varieties, but varying in colour greatly from each other. The first, *A. venusta*, is somewhat larger than the others, apparently raised betwixt *A. roseum* and *A. patens*, and partakes, in a medium way, of both its parents in size and colour, which is an intense purplish lilac, bright yellow in the throat. It is a prolific bloomer, foliage small, dark green tinged with reddish purple beneath, the same colour extending to the calyx, stems and peduncles of the flowers. It will certainly become one of the most prized among the cultivators of the Achimenes. The second, *A. coccinea intermedia*, has fine bright scarlet flowers, smaller than *A. roseum*, which is apparently its parent. The third, *A. coccinea superba*, fine, deep scarlet, with slight marks down the centre of the petals, somewhat larger than *A. coccinea*. The fourth, *A. coccinea grandiflora ignea*, is a crimson scarlet, very rich and brilliant, form round, with compact clean edges, free bloomer, and is a very fine variety. The habits of the three last-mentioned varieties are very similar to the *A. coccinea* species.

APIOS TUBEROSA. This plant we found growing most luxuriantly at Redleaf, over a trellised covered path, and flowering abundantly, though not beautiful as regards the colour (which is a dingy brown); yet from the perfume (being equal to Mignonette) we think it deserving of more extensive cultivation as a climber. In another respect it is valuable, from its roots being an article that may be eaten with safety. The habit is handsome, and as it blooms late in the season (August and September), when most of the scented flowers are over, adds another value to the plant. It was introduced so early as 1640, and is not now in very general cultivation.

CAMPANULA LACTIFLORA. In the gardens of the late Mr. Wells, Redleaf, Kent, this old though fine plant was flowering most profusely, varying, according to treatment, from bushy plants one foot high, to splendid specimens six feet high, completely laden with delicate pale blue tinted flowers. When seen in such a state as the latter, it makes a very handsome appearance in the flower garden.

PHYSOSTEGIA VIRGINIANA. A fine and very useful plant for the border, having long racemes four feet high, forming a compact bush, nearly the same in diameter, covered with long deep blue flowers. The specimen here noticed was in the gardens of the late Mr. Wells, Redleaf.

ERYTHRINA BIDWILLIANA. We have recently received from Messrs. Veitch, Exeter, a specimen, in flower, of this charming hybrid variety. In habit it is very neat and pretty; blooms when not more than twenty inches high, sending forth a spike upwards of nine inches in length. The flowers are of a most beautiful crimson, smaller than *E. Crista-galli*, but certainly far superior in colour, and appears to flower equally as free. We hope to see this handsome variety generally cultivated.

HELIOPHILA TRIFIDA. An elegant growing autumnal plant, we believe, introduced by the Horticultural Society, from whom Messrs. Backhouse, York, received seeds, and who favoured us with a specimen in flower. It has a slender and diffuse habit; much branched; producing beautiful sky-blue flowers in abundance. It is certainly one of the prettiest annuals of recent introduction.

IXIA SPE. NOV. Messrs. Backhouse, York, have also favoured us with flowers of a most brilliant orange scarlet colour, thought to be an Ixia. It was received by them from Caffraria, and expected to prove half hardy. The flower scape is from eighteen inches to two feet high, with distant lateral racemes near twelve inches from the apex or extremity downwards, producing an abundance of bloom. The foliage is long, narrow, and very graceful.

IXORA JAVANICA. At the July fete of the Horticultural Society, Chiswick, Messrs Veitch exhibited a new species of Ixora, from Java, which will form a decided acquisition to the species already in cultivation. The plant has large trusses of rich apricot coloured flowers, which are, when first expanded, a bright maize yellow, giving each truss a varied appearance. The individual flower is as large as *I. coccinea*, and quite pointed at the tip of the petals. The foliage is handsome; and it is in all respects a plant to suit cultivators as a specimen.

ONCIDIUM SPE. NOV. Messrs. Loddiges, Hackney, have recently flowered a most beautiful variety of Oncid. It has flowers verging upon *O. Lanceanum* in size, and colour of labellum, which is a deep rosy purple on the upper or narrow part, extending to the centre, when it breaks off into small spots near the edge, which is white; the sepals and petals are nearly allied to the *luridum guttatum* varieties, having a pale ground, richly spotted with brown. It is a very superior species in every respect.

PLEROMA ELEGANS. This remarkably handsome plant was exhibited at the Horticultural Society's Rooms, Regent-street, by Messrs. Veitch, Exeter, who received it from the Organ Mountains of Brazil. It has a superior advantage over all the species, being very dwarf; forming quite a bush; with neat foliage of a peculiar bright and glossy green; the flowers are of the richest purple, almost surpassing the splendid species *P. Kunthiana*, figured in our Magazine, No. 138, and nearly as large. The blooms possess a great attraction, as they last considerably longer than most of the other species; this quality will make the plant a great ornament to the greenhouse.

OPERATIONS FOR OCTOBER.

SINCE it will be impossible to calculate during the remainder of the season upon the absence of frost, we must henceforth look chiefly to our glass erections for that pleasure and satisfaction derivable from paying attention to flowers, or cultivating them. We do not recommend that the flower-garden and grounds, although the number and quality of their attractions may have been considerably reduced by severe weather, should be comparatively abandoned. Both, as well as every garden, whatever be its character as to size and situation, is capable of being rendered interesting, and indeed attractive, throughout the whole year. And now is the period to look to those matters which such a consideration involves. If no other obstacles present themselves, the season of year does not intervene to prevent the immediate commencement of such alterations and improvements as may have been determined upon. It may be, that neither of the latter are in contemplation, and, indeed, that there is little necessity for any; but we would recommend that an examination be made, with a view to ascertain whether there is not a want of evergreens, or of those fruit-bearing plants whose ripe berries, &c., amply atone for the absence of flowers, and the introduction of which might produce a pleasing variation, if nothing else were effected.

In the absence of anything in the way of improvements, &c., the operations of the present month are of a very routine nature. A considerable share of attention should be devoted to the production and preservation of flowers. The forcing-houses of pits will soon require to be in steady, but full operation. Bulbs to flower in pots may still be potted; and, towards the end of the month, some of the first potted ones will be getting fit to introduce into the forcing department. By that time, also, Roses and many others may find their way there. While we give these directions, and although we can understand the charm of Roses, &c., in December, the culturist must be admonished not to neglect those many things which will gratify him with their blossoms without the aid of the forcing-house being had recourse to.

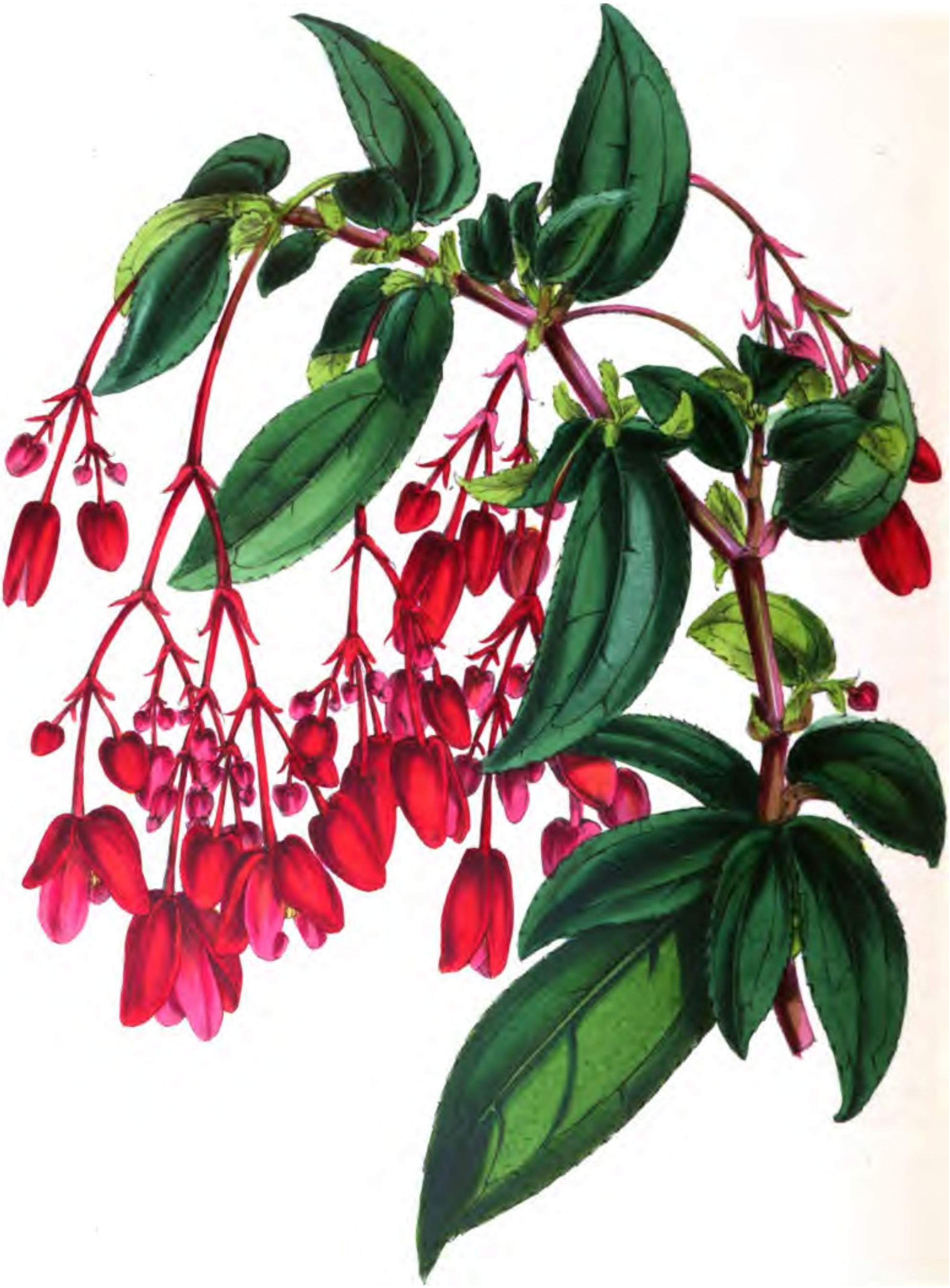
All newly-raised plants, intended to fill and decorate the flower-garden in 1848, ought to be well rooted and properly hardened off by this time, and, in short, should be in their winter quarters. But when there they must not receive unnecessary shelter, or their bursting into growth will be the undesirable consequence. Whether they are indulged with greenhouse room, or simply preserved in cold pits, shelter from excessive wet and injurious cold is the only protection required.

The state of the weather will decide how soon the saving of seeds, lifting tuberous-rooted or bulbous plants, and such-like business, is brought to a close. In the event of a prevalence of very wet weather, the latter will be better out of the ground as soon as they have become matured.

Those pot-plants which require the protection of a greenhouse, and that may have been standing in the open air up to this time, should not remain there until their last developments are "cut" with frost, but they should be forthwith housed. It is the best way to arrange all plants in their winter quarters at once, and it should always be done where circumstances will permit its accomplishment. Let great care be taken that no plants are stowed away which are infected with insects.

Stove plants generally, and Orchids, have simply to be maintained in that quiescent state into which the majority of them will have, by this time, descended. Those in blossom, and such as are growing, must be treated according to the requirement of the condition in which they are in. Do not lose any proper opportunity of giving abundance of air to the stove and Orchid house that contains those plants which are at rest.

In the flower-garden grounds, and elsewhere, let everything be perseveringly kept clean and tidy.



S. Holden, del & Lith.

Begonia fuchsioides.

BEGÒNIA FUCHSIÓIDES.

(Fuchsia-like Begonia.)

Class.
MONŒCIA.

Order.
POLYANDRIA.

Natural Order.
BEGONIÀCEÆ.

Generic Character.—*Male flowers.—Calyx* wanting. *Corolla* polypetalous; petals commonly four, unequal. *Female flowers.—Calyx* wanting. *Corolla* with from four to nine petals, generally unequal. *Styles* three, bifid. *Capsule* triquetrous, winged, three-celled, many-seeded.

Specific Character.—*Plant* a shrub. "*Stem* erect, two to three feet high, terete, succulent, glabrous, slightly tinged with red. *Leaves* copious, distichous, alternate, rather small, about an inch-and-a-half long, dark full green, obliquely oblong-ovate, slightly falcate, acute, serrated, glabrous, the margins obscurely ciliated, often tinged with red. *Stipules* oblong, obtuse, coloured. *Flowers* on dichotomously branched, pendent panicles, diœcious, rarely monœcious; all of a rich, deep, scarlet colour. *Pedicels* bracteated; *bracteas* lanceolate, acuminate, opposite. *Male flowers.—Sepals* four, almost closed over the stamens; two ovate, large and boat-shaped, thick and fleshy, opposite and external; the other two smaller, oblong, or approaching to obovate, slightly concave, of a thinner, almost membranous, texture. *Column of stamens* forming an ovate mass. *Female flowers.—Sepals* five, rarely spreading, oval, nearly equal, concave. *Stigmas* six, erecto-patent, subulate, waved. *Ovary* of the young fruit white, broadly obovate, triangular, the angles winged; two wings very short, and one long, divergent; all red, and decurrent, so as to form a triangular pedicel."—*Bot. Mag.*

We have frequently of late spoken highly of the ornamental and useful character of many species of this genus. The usefulness consists in their capability of continuing to bloom for a very long time, and in the property of bearing their blossoms at a time of the year when flowers are extremely scarce. The knowledge of this last feature, and the beauty of our present subject, and many others, was nearly unknown until the introduction of some really fine species, a few years ago, brought the plants more immediately under the notice of cultivators and collectors.

Not any of the kinds either new or old are equal to the present subject, and no species is so likely to promote the growing favour with which this family is regarded. It first appeared in public at a meeting of the Horticultural Society in Regent Street, during the autumn of last year, where it was sent by Messrs. Veitch and Son, of Exeter, who obligingly furnished us at the same time with the specimen from which our drawing was made.

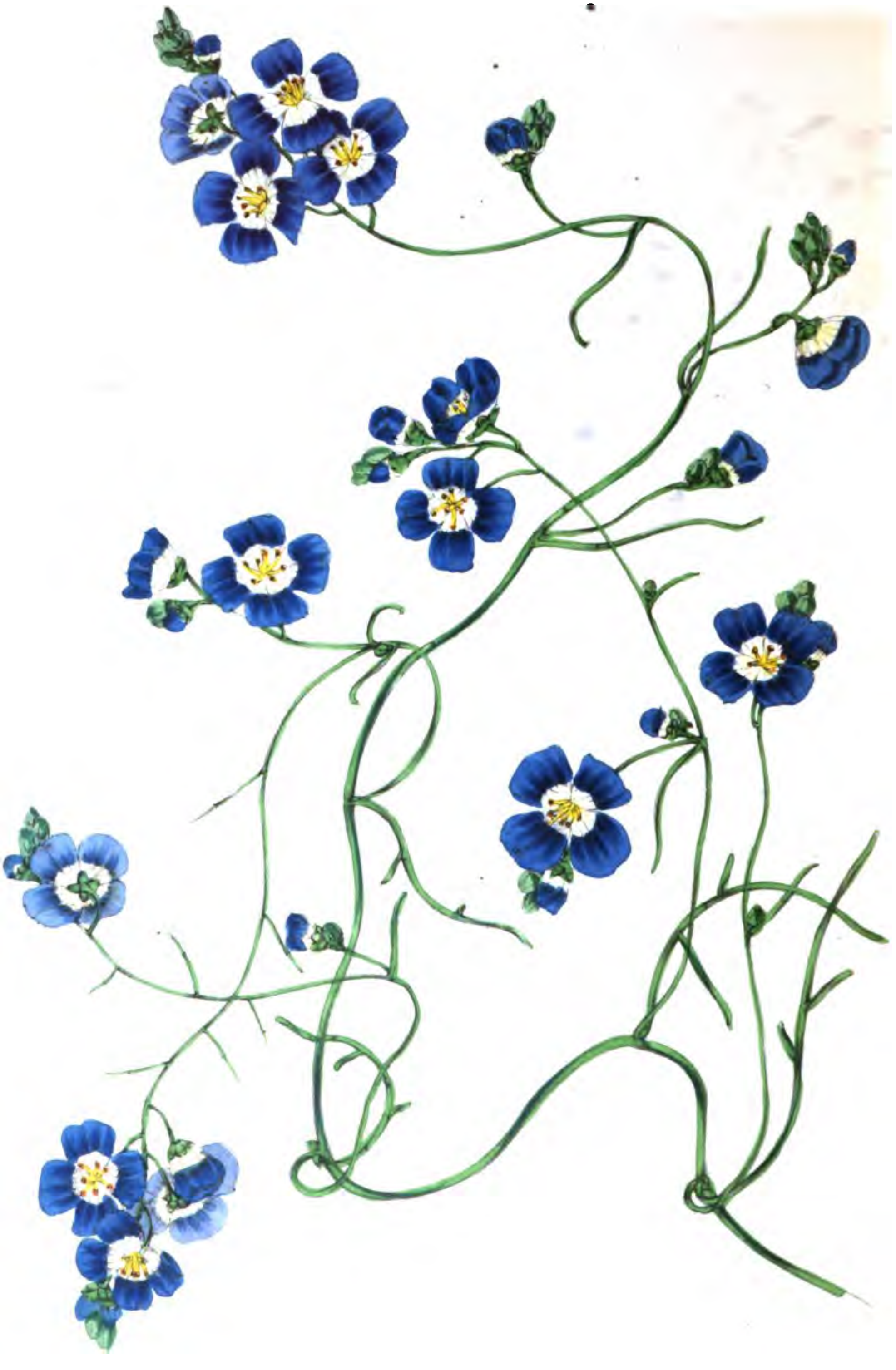
To the Royal Gardens at Kew belongs the merit of introducing this acquisition to our collections, probably in the year 1845. Mr. Purdie, late in the employ of the Kew Establishment, as collector, discovered it growing in New Grenada, from whence he sent it home.

From most of its fellows it differs considerably in being more shrubby, and having smaller leaves. These characteristics render it, if well grown, an interesting plant at all times, but especially so when it blossoms, particularly as it flowers through the most dreary parts of the year.

In cultivating this species the warmth of the stove will be required, and it should be grown in a fibrous open soil, composed of leaf mould and light loam in equal proportions. It has naturally a handsome habit, but this is greatly improved by stopping its branches and shoots, and tastefully disposing them as they grow. Cuttings treated in the usual way are a very ready means of increase.

As plants of interest, easy management, and of a really ornamental character, the amateur culturist can scarcely select a group that would afford him more satisfaction and pleasure than one composed of several of the best species. They commend themselves to him, because of their simple cultivation, their rare beauty, and their great diversity of character. The fact that the greater part are stove plants need not operate to prevent their cultivation, since notwithstanding a genial warmth is necessary for them during the period of growth, a warm greenhouse will suffice for the development of the blossoms of many of the species. Begonias are more at home, and are seen to greater advantage, when brought together in groups, and are so because from the peculiarity of the foliage they do not well associate with other plants.

The genus is named in honour of Michael Begon, an intendant of the French Marine, and a patron of Botany, who flourished in the seventeenth century.



S. Holden. del & Lith.

Heliophila trifida.

HELIÓPHILA TRÍFIDA.

(Trifid Suncress.)

Class.
TETRADYNAMIA.

Order.
SILIQUOSA.

Natural Order.
BRASSICÀCEÆ.

Generic Character.—*Calyx* of four sepals, equal at the base. *Petals* four, alternate with the sepals, disposed crosswise, distinct and free. *Stamens* six, two of which are shorter than the rest. *Anthers* two-celled, bursting inwards. *Carpels* two, closely connected together by one pistil. *Stigmas* two. *Silique* elongated, rarely oblong or oval, two-celled and two-valved. *Dissepiment* linear or oval; *valves* flat, or in the long siliques somewhat convex. *Seeds* depressed. *Cotyledons* two, opposite, incumbent, linear, plaited twice crosswise.

Specific Character.—*Plant* annual. *Stem* herbaceous, smooth, glaucous green, dividing at the neck into many branches. *Pods* necklace-like, rather pendulous. *Lower leaves* trifid, sometimes quinquefid; *lobes* entire, filiform. *Upper leaves* entire. *Flowers* blue, in terminal racemes, sometimes in panicles; *pedicels* filiform, bractless.

Synonyme.—Heliophila pinnata.

Of the numerous species of Heliophila which have been discovered and described by various botanists, twenty-four kinds are introduced into this country. They are all natives of South Africa, and have been chiefly brought from the neighbourhood of the Cape of Good Hope. A few are greenhouse evergreen shrubs of low growth, but the greater part are half-hardy annuals of easy culture; all very pretty, and certainly deserving the whole of the attention they require.

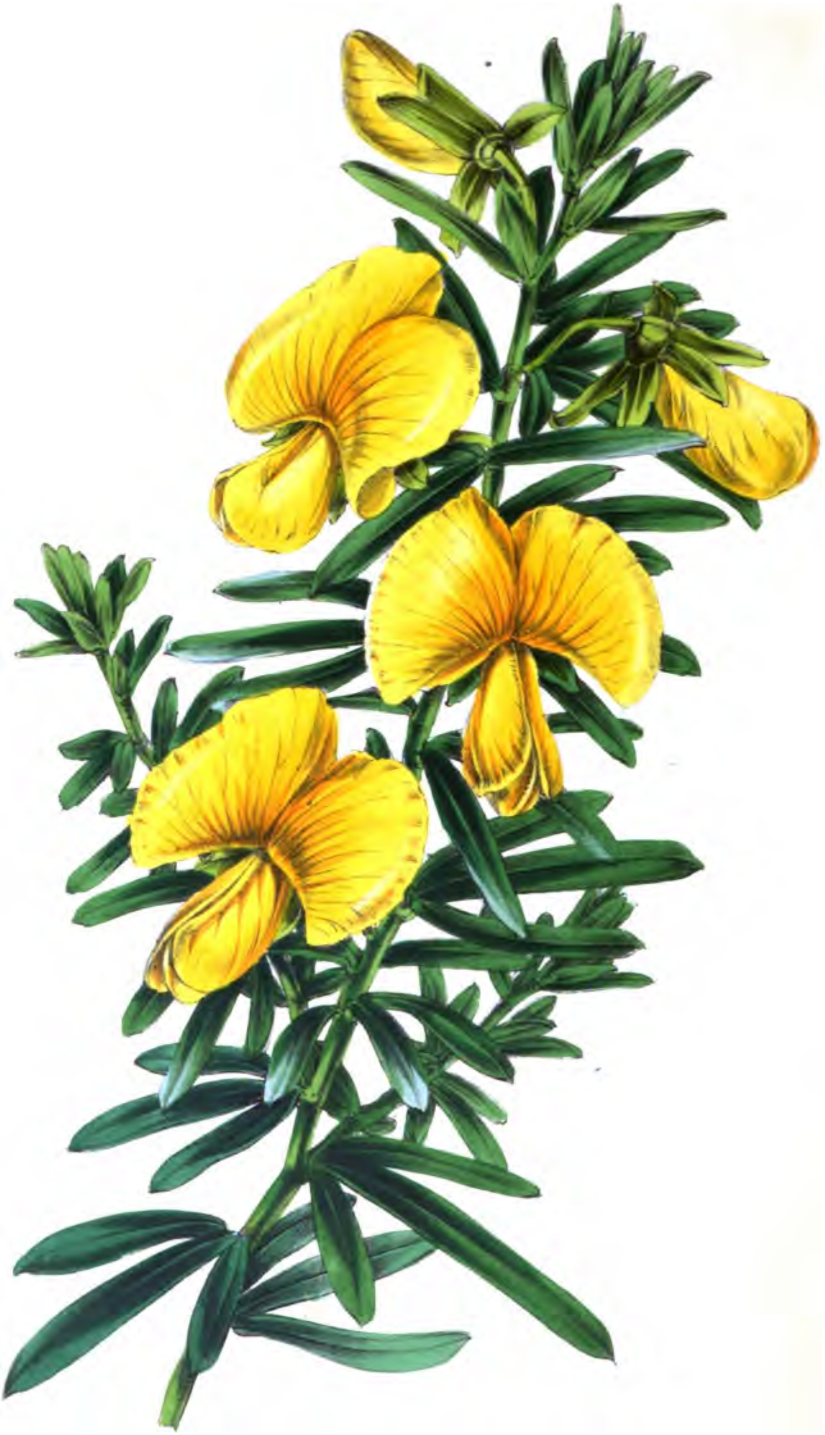
Our present subject *trifida* is not the least interesting amongst them; its beautiful light-blue flowers are produced in great abundance from midsummer until the middle of September; and it also forms a very superior plant when grown in a pot for the greenhouse, although by this treatment its flowering season is somewhat shortened; yet this can always be remedied by successive sowings of the seed.

The soil it requires to be grown in is a mixture of sandy heath mould, light loam, and well rotted leaf-mould, equal parts. Sow the seeds like other tender annuals about the end of February, and place the pots in a hot-bed or greenhouse. When the young plants are large enough to remove, plant them singly into 60-sized pots; and after the frosts are over in May, transfer them to the beds or borders they are to occupy; or repot for furnishing the greenhouse, as is deemed most desirable.

It is a native of Africa, and was found by its discoverer growing in those extensive sandy tracts near Cape Town. In 1819 it was introduced to Hamburgh, and from thence found its way into this country through the London Horticultural

Society, in whose gardens at Turnham Green it flowered in the summer of 1846, and was beautifully figured by Dr. Lindley in the "Botanical Register, vol. xxxii., t. 64. From specimens received in August last from Messrs. Backhouses, Nurserymen, at York, the drawing for our plate was made.

The name of the genus is derived from *helios*, the sun, and *phileo*, to love; on account of the plants growing in places exposed to the sun.



S Holden del & Lith

Gompholobium barbigerum.

GOMPHOLÒBIUM BARBÍGERUM.

(Bearded keeled Gompholobium.)

Class.
DIADELPHIA.

Order.
DECANDRIA.

Natural Order.
LEGUMINÒSÆ.

Generic Character.—*Calyx* five-parted, nearly equal. *Carina* of two concrete petals. *Vexillum* broad, spreading. *Stigma* simple. *Legume* many-seeded, nearly spherical, and very blunt.—*Mag. Bot.*, vol. xii., t. 19.

Specific Character.—*Plant* an evergreen shrub. *Stem* erect. *Branches* angular. *Leaves* alternate, nearly sessile, trifoliate; leaflets linear, rather acute. *Pedicels* furnished with minute bracteoles. *Flowers* about an inch in length, handsome, golden yellow. *Keel* bearded along the suture. *Vexillum* large, longer than the calyx and keel. *Pods* glabrous.

It is recorded in botanical catalogues that *Gompholobium barbigerum* was introduced to this country in 1824; but it is questionable whether, if this be correct, it was not again soon lost, as we have no account of it until about three years ago. But however it may have been with respect to its first introduction, it has certainly now found its way into many collections. It is a native of New Holland.

Under cultivation nothing beyond the treatment bestowed upon greenhouse plants generally, is required. It is a robust grower, particularly when compared with *G. polymorphum*, and some others. Plants in very fine condition were exhibited in London ~~last year~~ in 1847 by Messrs. Lucombe and Pince of Exeter, who are said to have been the first to introduce the species to this country. A specimen grown by them had become a large bush, and was profusely decorated with its fine yellow blossoms. It is easily increased by cuttings.

Mrs. Lawrence's extensive and famous collection of plants, at Ealing Park, furnished in the spring of this year, the specimen from which our plate was prepared.

The soil requisite for it, is a mixture of sandy loam and peat, and the plant must stand in a light airy greenhouse, like other New Holland plants, and receive a liberal supply of water during summer, but in winter must be watered with care.

The generic name is derived from *gomphos* a club, and *lobos* a pod, in reference to the shape of the seed-pods.

CRÒWEA LATIFÒLIA.

(Broad-leaved Crowea.)

Class.
DECANDRIA.

Order.
MONOGYNIA.

Natural Order.
RUTÀCEÆ.

GENERIC CHARACTER.—*Calyx* five-parted, persistent. *Petals* five, sessile. *Stamens* ten, shorter than the petals, flat, subulate, connected by entangled hairs. *Anthers* oblong, cordate, united lengthwise to the filaments on their inner side, and terminated by a long beard. *Ovaries* five, united. *Style* from the base of the ovary, five-furrowed. *Stigma* five-furrowed. *Capsules* five, joined. *Carpels* one-seeded. *Seeds* with an arillus.

SPECIFIC CHARACTER.—*Plant* an evergreen shrub. *Branches* three-angled. *Leaves* alternate, ovate-lanceolate, entire, covered with pellucid dots. *Peduncles* axillary, one-flowered, baving minute bracts at their base. *Flowers* rosy pink.

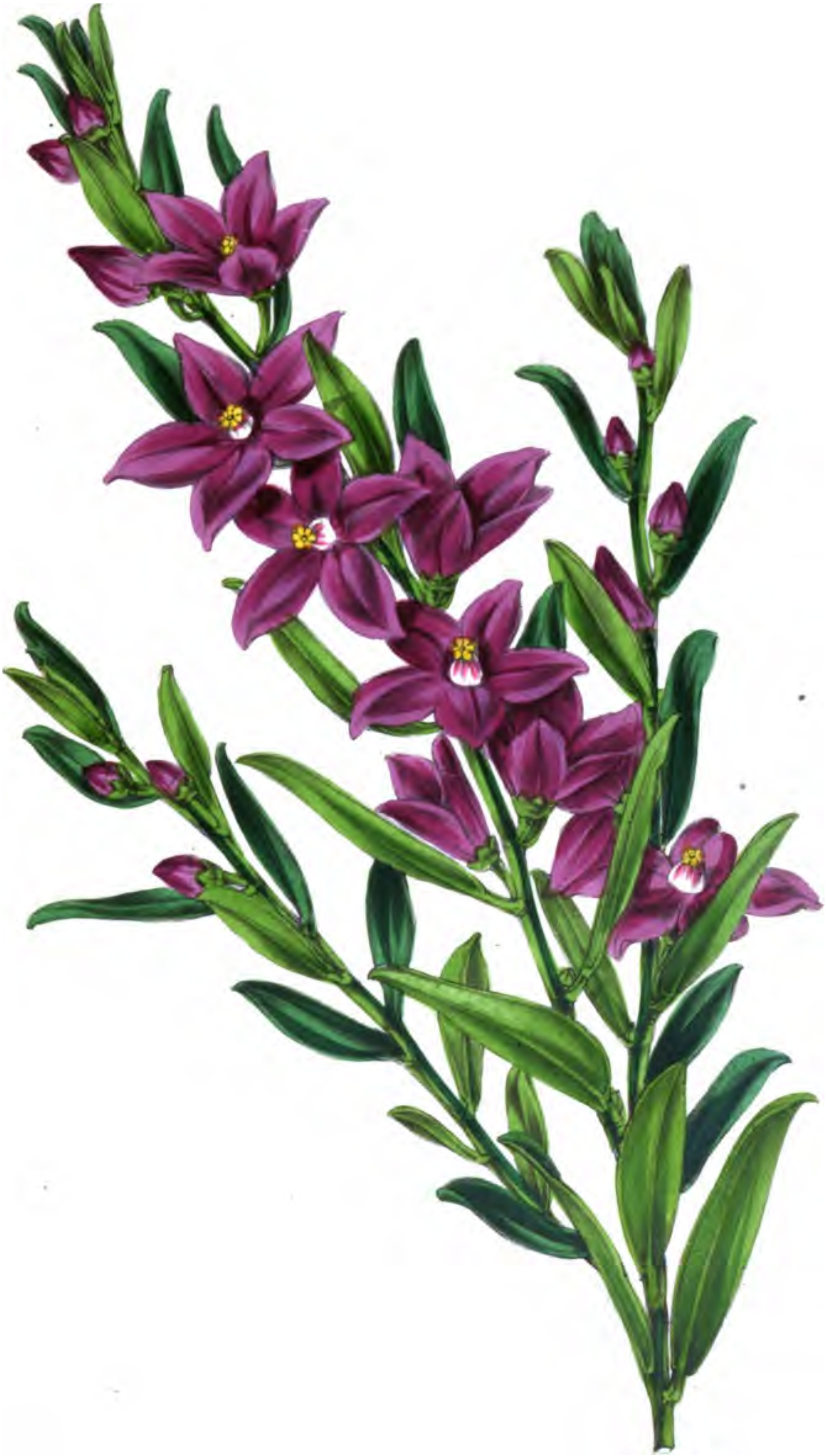
THERE are only two species known of this fine genus, and both are very handsome. *C. saligna* was introduced in 1790, and figured in the "Botanical Magazine," t. 989: the present subject, *C. latifolia*, is the finest of the two, and was cultivated in this country so long ago as 1824, but has remained so scarce, that even at the present time, it is met with in very few collections. Both are natives of New Holland, and therefore require the shelter of a dry and airy greenhouse, where they continue in flower nearly the whole of the year.

In cultivation, use light and porous soil, containing plenty of fibre; lay abundance of crocks for drainage; use moderate-sized pots in potting; syringe and water freely during summer, but administer water cautiously in winter, and place the plants near the glass in as light and airy a situation as possible, following exactly the directions given for the culture of the various genera of the tribe *Boroniea*.

Our drawing of this beautiful plant was made in the nursery of Messrs. Rollissons, of Tooting, in the summer of 1846.

The genus was founded by Dr. Smith, and is named in honour of his friend James Crowe, Esq., of Norwich, an excellent British botanist, and a great collector of Willows.

Rutaceous plants are rather numerous—consisting, according to Dr. Lindley's "Vegetable Kingdom," of forty-seven genera—they are all remarkable for emitting a powerful odour, which in some cases becomes unpleasant, as in the Bucku plants (*Baryosma*) of the Cape. This aromatic principle is in combination with



S. Holden. del & Lith

Crowea latifolia

the essential oil, with which the little sacs in the leaves and bark are replete; and which may be communicated to either water or spirits by infusion. In some cases, as in the various species of Dictamnus, this fragrant oil becomes vapourised in such quantities, that in hot, dry weather, if a lighted candle be brought near the plant, the oily exudations ignite and burn with a crackling noise; and a similar ignition takes place, but in a less degree, in several species of Diosma: this, however, is only observable when the night is dark.

In addition to the aromatic essential oil, which is in some species very acrid, all *Rutaceæ* contain a bitter principle, varying in intensity in the different species: many of them have been found useful in medicine. They chiefly act on the nervous system as stimulants; and therefore, in New Holland, some of the settlers use the leaves of *Correa alba*, and other species, as tea; and some of the American species, ranking under the groups *Cusparieæ* and *Pilocarpeæ*, are febrifugal. The Angostura bark is the produce of *Galipea Cusparia*, and the barks of *Esenbeckia febrifuga*, *Ticorea febrifuga*, and *Hortia Braziliana*, possess similar properties, but perhaps in a less degree.

Of the seven groups of genera into which the order is now divided, CUSPARIEÆ and PILOCARPEÆ are wholly from America; BORONIEÆ are natives of Australia; EUDIOSMEÆ are from Southern Africa, chiefly about the Cape; and DICTAMNEÆ, RUTEÆ, and CNEOREÆ, all occupy different localities in Europe. The native countries of each of these tribes will in part point out the modes to be pursued in their cultivation.

Of the *Genera* ALMEIDEA and DIGLOTTIS, both unknown in British collections, seven species have been described of the first, and one of the last. They are all natives of Brazil, and bear flowers in panicles: they have no doubt been several times brought into Europe, but have been again lost without flowering, so never came under the especial notice of cultivators.

ERYTHROCHITON.—One species only is known, *Braziliensis*. It is a fine plant, growing in Brazil to a small tree about ten feet high, with the habit of a *Theophrasta*, the stem being altogether unbranched, and its long, leathery leaves collected at the end. From amongst these rises a long, three-cornered flower-stalk, at the end of which are a few large white flowers, conspicuous for their fine red calyxes. It is said to inhabit close, shady places in the virgin woods of Brazil, preferring a granitic soil. The fragrance of its foliage is like that of the Orange, and its aromatic tonic bark is valuable as a remedy for the fevers of that country.*

It need scarcely be said, that the temperature required for the successful culture of this plant is a very humid stove, as its natural habitats, and other particulars known respecting it, will at once point out both this and its general treatment.

* Bot. Reg., Vol. xxix., t. 47.

The soil most suitable is a mixture of equal parts sandy loam, heath-mould, and sand; it is not well to break it very fine, but it must be well mixed, and if a few broken potsherds be mixed through, it will prevent the possibility of the soil, when in the pots, becoming close and sodden, which is very disadvantageous to most plants.

Select pots rather roomy, as the very habit of the plant's growth shows that its roots ought not to be cramped. If it could be turned out into a shady border in the stove, this would be far preferable. In potting, give plenty of drainage; for although, in its native woods, the situations it naturally occupies are damp, yet its preference for a granitic soil indicates that stagnant water would soon injure its roots. On watering during the season of growth, little need be said: syringing may be repeated every day, and a liberal supply at the roots; but when the plant is at rest, this must be so far diminished as to merely amount to what will keep it from drooping. During summer, shade is as indispensable for this plant as for Orchids, but in winter this must be quite removed.

Propagation is effected by cuttings, taken off when the wood is something more than half ripe, and planted thinly in a pot of fine sand, and placed under a hand-glass in heat. When the plants are struck and potted off, still allow them to remain in the propagating-house, until they have recovered from their removal.

GALIPEA.—Sixteen species of this highly fragrant and beautiful genus are known and described, all natives of Tropical America; but only two are *yet known* in British collections, although it is not unlikely several others are already in this country. The prevailing colours of the flowers are yellowish-white, tinged on the under side with pink, and with the calyxes more or less coloured;—*trifoliata* is the best known, being introduced in 1816, and *odoratissimum* in 1829: this latter species, although yet scarce, is already in a few choice collections; it is an exceedingly fragrant plant, found in the woods of "Rio Janeiro, by the late Sir Henry Chamberlayne. When in flower, the whole atmosphere of the hothouse is perfumed as if with jasmines, and the period of blossoming lasts some time." * Its stem grows upright and is branchless, something like that of *Erythrochiton*, and it attains the height of four feet. Several other species emit a most delicious fragrance, and are in other respects highly interesting. *Cusparia* is the species which produces the medicinal drug called Angostura bark.

The culture of this genus resembles in several particulars that of *Erythrochiton*. Soil, potting, drainage, temperature, watering, and shade are the same; but all the species of this genus, to flourish well, require the application of a good bottom-heat, either by means of a tank or by the pot being plunged in a bed of fermenting materials, as tan or leaves.

LEMONIA.—For the culture of this genus see t. 73 of this volume of Mag. Bot.

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* Bot. Reg., Vol. xvii., t. 1420.

MONNIERIA, SPIRANTHERA, and TICOREA.—The first has only one species, *trifolia*, a white-flowering annual of no beauty, discovered in Guiana and Brazil, requiring the common treatment of tender annuals. For the culture of *Spiranthera odoratissima*, refer to *Galipea*. Seven species of *Ticorea* are described, and two of them are now not uncommon in our stoves. *T. fœtida* and *T. jasminiflora* are both deserving of cultivation; in their native countries, Guiana and Brazil, they are reputed to possess fine medicinal properties. Neither of them emit a pleasant fragrance, but, especially the former, is very disagreeable when the leaves are bruised.

The cultivation of *Ticorea* differs in nothing from that recommended for *Galipea*, except that less shading is required, and in propagation ripened cuttings are used, instead of being only little more than half ripe, as there recommended.

The above eight genera constitute the *First Group* or Tribe CUSPARIEÆ, from their agreement, in several important characters, with *Galipea Cusparia*, the type of the old genus *Cusparia*.

CHOISYA—*ternata* is the only species known, and is a beautiful evergreen shrub, growing from six to eight feet high. It was found in the dense woods of Mexico, and was introduced in 1825. Its culture is the same as *Galipea*.

ESENBECKIA.—Two species, *E. febrifuga* and *pilocarpoides*, have been described, and probably both have been introduced. The culture is the same as *Galipea*, except that the cuttings are made of the young, instead of ripened wood.

EVODIA.—This genus, which contains three species, require exactly the treatment of *Esenbeckia*.

GEIGERA, HORTIA, MELICOPE, METRODOREA, and PILOCARPUS, form the *Second Group*, called PILOCARPEÆ. All these are treated alike in cultivation, and are well deserving of a place in the stove.

Tribe 3—BORONIEÆ—is composed of plants from the neighbourhood of Australia. Some are old and well-known inhabitants of our greenhouses, as the species of BORONIA—"Magazine of Botany," vol. i., t. 173; vol. iv., t. 267; vol. viii., t. 123; vol. ix., t. 123—and CORRÆA—"Magazine of Botany," vol. vii., t. 79 and 195; vol. ix., t. 267; and the present volume, t. 147. Others, however, are less known, although some of them have been many years in the country, as *Crowea*, the subject of the present plate, *Chorilæna*, *Cyanothamnus*, *Diplolæna*, *Didymeria*, *Eriostemon*, *Hugelia*, *Phebalium*, *Philotheca*, and *Zieria*.

The whole of these genera require, with a few exceptions, the same kind of treatment in culture. These exceptions arise from the difference in structure and hardihood of the various species. Some of them are very beautiful, and indeed the greater part deserve extensive cultivation. The two species of *Diplolæna*, it is true, possess no great share of attractions, and two or three others would scarcely deserve a place amongst a choice selection; but the remainder, when nicely grown, will meet with well-merited esteem. The *Eriostemons* are all beautiful, but they are slow growers; and their roots, being delicate, are apt to suffer from over or under watering, and by potting in soil that binds close together. They are also difficult to strike from cuttings; their branches, when separated, are very susceptible of injury; and their roots being so long in forming, the danger of loss is greatly increased. With *Phebalium*, also, of which several species are in our collections, great care is requisite in watering, and the plants must also be placed near the glass in a very airy situation, especially during winter. The *Zierias* are not hard to grow well, but their soil must be particularly light and open, or they soon perish, and in propagation it is necessary to make cuttings of the young wood.

The proper temperature for the whole of these plants is an airy greenhouse, where they will not stand very far from the glass, or be crowded amongst plants with a very heavy foliage.

All the slender species should be grown in a soil composed of two parts heath-mould, and the remaining part a mixture of light loam and sand; but the more robust growers thrive better in a soil made with equal portions of light loam and sandy heath-mould. It is indispensable that the soil should neither be sifted nor broken too fine, and that it should contain a good portion of fibre, that there may not be a possibility of it binding in the pots.

Place the plants in pots of a moderate size, for they delight in spreading their roots along the sides of the pots. Also, let abundance of drainage be given to each plant; if one-fourth of each pot is filled with broken potsherds and bits of charcoal mixed, it is all the better; also a few potsherds mixed with the soil, that the water may percolate freely, is always an advantage.

In watering during the summer season, give a good supply to the roots, and also syringe in fine weather; by these means and abundance of air, the growth will be greatly promoted; but on the approach of winter syringing must be entirely dispensed with, and the proportion of water administered to the roots must be no more than will keep the soil in the pots from becoming parched and dry: the foliage must likewise be kept free from dirt and insects.

When greenhouse plants are placed out of doors in the summer months, it is advisable to make these an exception to the general rule; for they invariably suffer either from too great an exposure to light, too much moisture, or from drought —one or other of which, with the very best attention, can scarcely at all times be avoided. If kept in the house with *Epacrises* and other plants of like tender habits, they will amply repay the cultivator for any extra trouble they may have given, by their continued healthful developments, and the profusion of flowers they will produce.

They are propagated by cuttings of the half-ripened wood, which, although they do not strike very quickly, are nevertheless not difficult to root. Plant them in pots of sand, and cover with a glass, but do not subject them to a moist heat, or they will soon disappear: select a cool, and rather dry part of the propagating-house, take off the glass occasionally, to allow the cuttings to dry; and in watering be careful never to wet the foliage, and allow them to stand exposed for a time until they are partially dried again before the glass is replaced. When struck, pot them off in sandy heath-mould, disturbing the roots as little as possible, and keep them in rather a close place until they have begun to grow; then remove them to the greenhouse, and treat as before directed for the parent plants.

The next group in order is EUDIOSMEÆ; it includes a number of African genera, chiefly from the neighbourhood of the Cape of Good Hope. In this tribe are some splendid ornamental plants. *Calodendron capense* is perhaps one of the handsomest deciduous flowering trees the Cape affords; it grows from twenty to thirty feet high, and bears large panicles of rich flesh-coloured flowers. All the others are shrubs, varying in growth from one to three feet, with a habit not unlike *Erica*, and bearing white or rose-coloured flowers. The various species of *Barosma*, but especially *crenata* and *punctata*, are called by the Hottentots *Bucku*. The leaves are dried, powdered, and mixed with grease, and with this unpleasant-smelling unction they anoint their bodies. The names of the genera are *Acmadenia*, *Adenandra*, *Agathosma*, *Barosma*, *Calodendron*, *Coleonema*, *Diosma*, *Euchætis*, *Empleurum*, *Gymnonychium*, *Macrostylis*, and *Pachystigma*.

With the exception of *Calodendron*, which is a little difficult to propagate, all these genera are very easy of culture. To be successful with the former, the cuttings must be made immediately on the wood becoming matured; for—as the plant is deciduous—if the wood is allowed to become too old before the cuttings are made, the leaves fall before roots are protruded, and success is very doubtful.

The soil in which the whole of the plants in this group will grow best, is sandy heath-mould, with a small portion of light turfy loam.

Pot them after the manner of other plants with heath-like habit; give plenty of drainage, and treat them in every respect like common greenhouse plants.

Propagation is effected by taking off the extremities of the young shoots, and planting them in pots of sand under a glass, but without heat.

Tribe 5—DICTAMNEÆ—has but one genus, *Dictamnus*, or *Fraxinella*, a hardy herbaceous plant, of the easiest culture in the open borders.

Tribe 6—RUTEÆ—embraces *Biebersteinia*, *Boenninghausenia*, *Haplophyllum*, and *Ruta*, none of which are remarkable for their beauty. Those requiring the shelter of the greenhouse and frame merely need to be potted in light sandy loam, and are easily increased by cuttings planted under a hand-glass, either with or without heat. The hardy species may be planted in the open borders, in any light sandy soil.

Tribe 7—CNEOREÆ—consists of *Cneorum* and *Heterodendron*. The species of both are frame shrubs, easily grown, and propagated by cuttings, as recommended for *Ruteæ*.

HABITS OF PLANTS—SEASON OF REPOSE.

We approach the season of winter, and some preparation is accordingly required. It is usual to date the commencement of that season at quarter-day, at the period when the sun, having attained its greatest meridional depression, passes into the ascending signs of the Zodiac. This has been noticed in a former article, but it will not be out of place to remind the gardener that *his* winter must commence about the middle of November, when the growth of plants having ceased, a state of rest has been, in the ordinary run of years, completely established.

In our next, we propose to recur to the subject as appropriate to the middle of winter. Now it will be sufficient to attend to those preparatory steps which experience has proved to be in accordance with the laws of Nature, so far as our artificial habits can be made conformable to those laws.

We have now to attend to an established *rule* which it has of late years become fashionable to announce as absolute:—"*All Nature requires rest; and every plant that the earth produces, a period of repose or torpor.*" There is plausibility in this, because we perceive that the hardiest weed of the ground sinks into repose, or at all events ceases for a time to grow; but, on the other hand, the great natural agents, those which actuate the vital principles, never become inactive. The *sun* (so far at least as respects sensible appearances) continues its course without let or remission; its altitudes and vitalising power vary, its light diminishes or increases according to the seasons; and thus, in proportion, it acts upon the vegetable tissues: therefore, while we admit the changes which are in ceaseless operation, we must qualify the rule, and be very cautious before an attempt be made to bring about a state of rest, which is by no means indispensable to the healthy condition of all the subjects which are introduced to our miscellaneous collections. Waiving the consideration of the hardy plants cultivated in the open garden, we come at once to the subjects that are indicated by the above title.

The *habits* of plants must greatly depend upon peculiarity of climate. How then can we expect that the tenants of our artificially constructed houses should conform simultaneously to one uniform method of treatment and discipline? And is it possible that a state of rest should be induced among hundreds of individuals whose characters are remote as is their natural place of abode?

The only mode of treatment (we mean generally) that can be adopted at the approach of our cold and misty weather in November, consists in a gradual abatement of water, to an extent that shall be just sufficient to maintain the verdure of the foliage without flagging.

When *evaporation* from moist surfaces, either of the mould or floor, is proved by any good hygrometer to be nearly at an end, it is clear that little water can be required. A very simple instrument will be found to answer the purpose in most ordinary cases. Let a piece of the best whipcord fifteen inches long be completely saturated with strong salt brine; strain this against the face of a strip of well planed oak-board eighteen inches long, and fasten each end to two brass-headed nails, so that the string be tight while wet. To the board let another piece of the same wood be fixed, and at right angles with and below it, like the drawing-master's cross-shaped square. This strip of wood need not be above six inches long, and to it is to be pasted a piece of paper graduated as a scale of equal parts, to be determined by the expansion of the salted line when made perfectly dry before the fire. A silk line fastened to the middle of the cord, having a large shot attached to the end of it, will serve as an index at all times; and at the season alluded to, when a vaporous atmosphere prevails, the salted cord will contract and become so tight, as to raise the weight to its upper limit marked zero—0. This instrument, which was figured some months ago in the *Gardeners' Chronicle*, is extremely sensitive; it marks the slightest variations of moisture in a house, even those occasioned by a passing cloud over a bright and powerful sun. It also proves how extremely difficult it is to maintain vaporous saturation during the existence of actual sunshine.

Having the means at command to ascertain with a degree of accuracy the moisture of any plant-house, we are in a position to investigate the habits of the plants usually cultivated in large establishments, and to arrange them under several heads. Not, however, to indulge too much in minutiæ, we will restrict these to five, namely:—

1. Plants of the Orchid tribe, *Orchidaceæ*—Orchids.
2. Plants whose organisation is strictly succulent.
3. Plants, miscellaneous in structure, natives of warm climates, and therefore always requiring heat—*Stove plants.*
4. Plants not absolutely tender, but requiring protection and impatient of moisture.
5. Greenhouse plants of the hard-wooded families.

As this investigation refers entirely to the treatment which is indicated by the approach of winter, it will be needless to take any particular notice of the various erections in which the subjects are deposited; each will, therefore, be considered as a separate and individual planthouse.

1. *The Orchids.*—These plants, by the peculiarities of their organisation and natural situations, plainly indicate that their abode must be select, and their mode of treatment arbitrary. Orchids are divided into two distinct classes, the *Epiphytal* and the *Terrestrial.* The former grow upon trees in the tropical forests of Asia and South America. "They establish themselves upon the branches, and either vegetate amidst masses of decayed vegetable and animal matter, or cling by their long roots to the naked wood, from which, and the humid atmosphere, they exclusively derive their food." Great heat, a vaporous atmosphere, and deep shade, therefore, are the elements of their life.

The *terrestrial Orchids*, on the contrary, require a little soil, such as the earth of decayed mosses and wood, and fibrous heath-soil, interspersed with pieces of broken sandstone. "In general," says Dr. Lindley, "in hot countries, the species are Epiphytes, while the terrestrial orchids that grow on the ground are rare and unknown," they require a colder climate, and are found abundantly in North America. Every cultivator should peruse the articles that are found in so many previous pages of this magazine, and the larger works by the pen of Dr. Lindley, and in other more recent publications. When every known fact is taken into consideration; when it is also seen that at this declining season of the year numbers of superb species are blooming or coming into flower, how can it be conceived that a state of torpidity or rest should be induced—much less forced—upon such by arbitrary means? The attempt would be equally irrational and injurious! We construct an orchidaceous house, we are constrained to do so; but herein we introduce the natives of various climes and habits; the gardener, therefore, has specific duties to perform; his eye must be everywhere; and so far as artificiality on the one hand, and general principles on the other, are kept in view, the discerning cultivator must be ever on the alert to attend at once to the requirements of each particular and individual species. The writer was lately favoured with a view of Messrs. Rollisson's houses at the Tooting Nursery, and therefore he can confidently refer to the article upon the "The Culture of Orchideæ," as practised in that fine establishment, which is given at pp. 45-6, vol. iv. of this Magazine. To many persons, however, the following extract may be still acceptable:—"Messrs. Rollisson grow their Orchideous plants in a mean temperature, varying between 65° and 75° Far., with a moderate degree of moisture, and by thus avoiding extremes, they cultivate them to a degree of perfection to which few attain." Their house has a span-roof, and runs in a line from north-east to south-west; when we saw it, although the day was cloudy and showery, the span-roof was shaded with a light covering, the paths had been recently sprinkled, but there was no appearance of drip or wet upon the plants, the heat was soft, moist, and oppressive, so far as closeness and the peculiar faint odour of the bloom were concerned; but the thermometric temperature from the hot-water iron pipes at noon did not exceed 72° to 75°.

"Down the centre there is a brick pit, which is filled at the bottom with brick-rubbish, and towards the surface with old spent bark or coal-ashes, and on this, the largest plants are elevated to within three or four feet of the glass; all round this pit there is a path which is paved with stone, and between this path and the outside walls, there are stages on which are placed the young and small plants, among which are a few large ones."

Some years having elapsed, numberless species have been introduced, and many *Epiphytes* with pseudo-bulbs growing on blocks, &c., &c., are now suspended from the rafters. On this subject, and on other modifications, a future inspection may enable us to communicate further information in the next number. At present what has been written will suffice to point out the object of this cautionary article.

2. *Succulent plants.*—The *Cacti*, *Epiphylla*, and the like, may be taken as examples. They transpire little, and in general require no supply of water during

the silent months. *Epiphyllum truncatum* must be considered an exception, as that species and its varieties generally blossom at the commencement of winter.

These succulent tribes have been usually consigned to the *dry stove*, a house wherein a temperature of at least 50° to 55° is kept up, and no evaporating material is ever permitted to be present. A dry atmosphere at a heat 10° lower, may be deemed perfectly safe. Most of the succulents will also prosper in a sunny room of the dwelling-house.

3. The *Stove-plants* being natives of tropical climates are, doubtless, obedient to the original principles of their vital action; hence the constitution and temperament of plants, natives of opposite tropics, scarcely fail to be governed by different laws. Many tender plants, so far from being at rest, are now actually in full vigour, their foliage and blossom beautiful and perfect: take the *Ixora coccinea* as an example, with hundreds of the other finest evergreens. The heat of the plant stove may be gradually reduced to 60° by fire-heat as its maximum; and here we would recur to Mr. Meek's house at Nutfield, a double span facing nearly north and south, and which retained nearly perfect equability of temperature throughout the rigours and gloom of the last protracted winter.

4. *Plants* not quite tender, but impatient of moisture. We take the Pelargoniums as an example, but claim the undoubted right to assert that while such juicy species demand much air, a dry atmosphere of about 42°, and a great diminution of water, not one of them should ever become droughted so as to cause a laxity or flagging of the foliage.

5. The *Hard-wooded* and hair-rooted tribes.—Here again drought and an arid condition of soil cannot be permitted. Cold air and plenty of it, a dry house or pit—but absence of frost—these are the conditions. Heath-mould is the staple of their soil; if that become heart-dry, who can temper it again? A ball so parched repels the approach of water, and from that moment the plant deteriorates.

To sum up the whole of the evidences which have been adduced, we observe in few words, that in the abstract there is no such thing as the safe induction of an artificial degree of repose, and Nature will point out the steps in which the gardener ought to follow. The health of each individual is the sure index; growth, constrained growth, is ever attended with undue elongations and poverty of colour: *that* is not health. The tribes of *Gesneræ* may be made to grow all the winter; but in nine cases of ten, they dry off and disappear. Such plants ought to be kept dry, their juices are locked up and at rest. But others—deciduous shrubs—are not internally silent, and should not be suffered to become dry. Wet ground in the open garden never injures any shrub whose tissue can sustain an ordinary frost; why then should we act in opposition to the laws of Nature? It is our office and duty to protect, not to reduce our artificial treatment to an absurdity.

FACTS, HINTS, AND EXPERIMENTS ON THE MANAGEMENT OF VARIOUS TENDER PLANTS IN THE WINTER SEASON.

LAST month we concluded our remarks with a promise to return to the subject, and discuss it in its relation to the classification of plants in greenhouses, &c. We shall now proceed to our task, first making some general remarks, illustrative of what may be accomplished with certain plants by departing from what are considered practical *rules* in their management, and then offer such general remarks as we consider of importance in the winter treatment of certain plant houses.

In plant management there is not a greater fallacy, or one more calculated to retard the progress of good cultivation than that which supposes and inculcates the doctrine that plants of all kinds must be brought into a state of rest about this season, and that on no account must any attempt be made to excite these to new, or even to enable them to complete their growth, after the present time. If the advocates of this doctrine would just take time to consider, and would calmly examine the collections under their own management, or that of their neighbours, they would, in all probability, find that many late-flowering hard-wooded plants, such as the various *tricolor*, *ampullacea*, and other Heaths, with Dillwynia, Pimelea, Zichyas, and many other greenhouse plants, have scarcely commenced their season's growth at this time, and that, therefore, to endeavour to stop, or not encourage them—of course, suiting the encouragement to the season, and amount of light—would be the height of absurdity; and yet this very doctrine has been inculcated since the days of John Abercrombie, and is annually repeated by the calendar writers of the present day, with as much solemnity as if it was not a natural law that evergreen ligneous plants, after producing one set of flowers, should commence to make wood to produce another set, and that consequently they should receive assistance from the cultivator at the very time they require it, be that time mid-winter or mid-summer.

Every person who has grown the tuberous-rooted species of Tropæolum knows how much more freely they grow during the winter than at any other season of the year, and those who have been the most successful in their management are aware that they grow much more freely even in winter, in comparatively dark, than in houses where they are exposed to an excessive amount of light. And why is this? —because in their native habitats they are under-growths, scrambling over low shrubs, and partly shaded by trees of larger growth. But, when they come to this country, we forget these things, and, knowing they are from countries where the sun has more power than with us, we place them under circumstance which we consider as advantageous as possible, but which, in point of fact, are positively injurious to them. To test the accuracy of this statement, let any one who has two plants start one, at the present time, and place it in the darkest corner of the greenhouse, of course not too far from the glass, and let the other be started in March next, when it can have all the supposed advantages of excessive light, and he will find that what we have said is perfectly true. Scores of other greenhouse plants might be mentioned which obey the same law, and until our collectors describe the exact position in which they find the plants, such as whether in light or shady situations, or damp, or dry, or high, or low, we shall continue to grope our way to success in the same state of happy ignorance.

Of plants which grow in the most admirable and satisfactory manner during the winter season no stronger illustration can be adduced than that of the genus Pimelea. These plants will do more in three months during the dull weather of winter and early in spring than they can be made to do in six months at any other time of the year. Indeed, during the hot, dry weather of summer, it is almost impossible to induce them to make anything like healthy and vigorous progress, even though they be placed behind a north wall, and every endeavour be made to render the situation as suitable to them as possible, by sprinkling, shading, and bringing into play all the devices generally employed to generate a moist, healthy, and growing atmosphere. These plants, especially the more delicate ones, such as *P. rosea*, *Hendersonia*, *hispida*, *&c.*, seem to hate a hot situation and an unclouded sky; but, place them in a cool and rather damp pit, where, with a free interchange of air, they can, from the end of September to the return of spring, be kept at a temperature of about 40° to 45°, and where the atmosphere can be kept sufficiently moist, but not wet, and they will grow with vigour unknown to them in any other situation. The reason of this is, that these plants under powerful light produce flower-buds almost before they have made shoots half-an-inch long, and hence they cannot grow; but place them under circumstances where the flowering principle is placed in abeyance, or excite them at a season when the sun's rays impinge upon our earth at an oblique angle and there is a want of bright light,—the growing principle is alone excited, and the result will be progress of a very satisfactory kind. Plants thus treated may be stopped five or six times in the course of the winter, and will each time produce abundance of vigorous shoots, but in the summer it is almost impossible to get them to produce two shoots where they will send forth six or eight at this season.

This, I have no doubt, will appear a very singular doctrine to many, but more especially to that class of cultivators who would make plants rest during the winter, whether they are disposed to do so or not, merely because such treatment accords with their preconceived notions of what, theoretically, we are taught to consider right. Practice however tells us that general rules in gardening, as in every other branch of knowledge are subject to exceptions, and the observant cultivator who uses his eyes as well as his head, will require very little experience to discover that many plants which he has looked upon as difficult to cultivate under general rules will grow with great freedom if he assists them at the time when they appear most inclined to assist themselves.

It will always be found that the most difficult plants to cultivate make an attempt to grow at some particular time, and if they are assisted at that time by (if in the winter season) a little additional heat, a closer or moister atmosphere, or in any other way the experience of the cultivator may suggest, it is very likely that he will attain his wishes at a time and under circumstances which previously he had no conception of. This points out the importance of close and diligent observation, and the indispensability of great experience and untiring study, to make a man a first-rate cultivator. It also accounts for the marked success of many men who force themselves into public notice as superior gardeners, and who know nothing of the theory of their success, except what they have gathered from their daily practice, but who sometimes rise up and put to shame those whose superior scholastic attainments ought to have placed them in a more forward rank.

In endeavouring, however, to assist a delicate-growing plant, more especially in the winter season, it must always be borne in mind that plants which are constitutionally delicate do not like extreme changes at any time, or of every kind; and consequently, though a plant may be benefitted by five or six degrees additional heat, very possibly an increase of ten or twelve degrees in the temperature of the house would be positive destruction to it. It will therefore always be wise, in subjecting greenhouse plants, especially delicate-growing ones, to more heat than what it is customary to give them, to do so gradually, and so that they experience no sudden change—at least not until such time as you have satisfied yourself by experiment that what you are about to do is quite right. As a singular illustration of what may be effected with a very difficult plant by increased temperature at what would appear a very unseasonable time, we have for some years past been in the habit of subjecting the whole of our Gompholobiums to the temperature of a cool stove, or intermediate house at this season, and we find that they will make more growth under such circumstances during the winter, than it is possible to induce them to make in double the time in the summer season. This is more especially the case with the most difficult plant in the whole genus, *G. splendens*, the beautiful bright-yellow species, which every person admires, but which at the same time very few, even among the best cultivators, can succeed in getting into anything like vigorous growth. Some time back, however, we put a plant, as a kill-or-cure remedy, into regular stove heat, and, to our great surprise and gratification, it directly started into vigorous growth, and continues to progress at the rate of three or four inches per week, the shoots being strong and healthy, and what is more remarkable, the foliage particularly strong and fine. Generally, the foliage of this species is small, crumpled, and diseased, which made it very objectionable; but grown in stove-heat, the plant promises to become not only manageable, but really a very great acquisition to collections. We keep the plant at the coolest end of the stove, and when it has finished its growth we shall remove it into the intermediate house, and from thence, after a time, to the greenhouse. Here, then, is the key to the cultivation of one of the most beautiful climbers in creation, a plant which every one admires, and which every person who has a stove may now cultivate with success.

From the preceding remarks, and also from suggestions which have been thrown out from time to time in this *Magazine*, it will be seen how exceedingly difficult it is to draw a line of demarcation between stove plants and greenhouse plants, and in our artificial treatment, how egregiously we err in supposing that because a plant comes from a temperate climate, it will not bear a considerable amount of heat, or because another plant may come from a tropical country, it will not submit without injury, under certain circumstances, to a considerably lower temperature than what it was accustomed to in its native climate. We are quite aware that constitutionally a plant cannot be changed, and there is not an instance on record of any plants being able to resist uninjured a temperature one degree lower than what it would the day it was introduced into the country. True, we have treated plants as tender which subsequently been found to be quite hardy, and by unnatural treatment, such as stinting and starving, we have rendered certain plants able to resist for a time an absence of heat (or amount of cold), which would have been certain death to their more free-growing compeers; yet this has only been a result of bad management, and therefore cannot be regarded as a proof of the change of the natural constitution of the plants.

There cannot be a doubt but that many plants which we generally subjected to greenhouse treatment, would, especially in the winter season, be much better in a warmer atmosphere, as for instance, those which we have enumerated in these remarks, and many more which might be mentioned; while of those plants which are commonly regarded as stove, many would, during their dormant season (the season after their bloom is set), be materially benefitted by a temperature somewhat lower than we generally give them. During the last winter the writer kept a plant of *Stanhopea tigrina*, a stove Orchid, in a greenhouse temperature, and not caring much about it, in the summer, at the time of turning the other greenhouse plants out for this season, it was placed in the open air, where it continued to grow in a satisfactory manner, making both healthy roots and leaves, and in July it threw down a strong flower-scape, which would have produced five flowers, had not a frost, on the 2nd of September, cut short its further progress. We think the time is not very distant when a certain number of the most hardy Orchids will be wintered in the warm end of the greenhouse, and will decorate that house with their singular and beautiful flowers at a time when its other occupants are in the open air.

It therefore appears pretty clear, that to ensure first-class cultivation of both greenhouse and stove plants, the great desideratum is an intermediate house, which may be kept at a temperature suitable to the more tender greenhouse plants and which at the same time will not be too cold for many of the more hardy stove plants. The minimum temperature of this house by fire heat, would be from 45° to 50°, through the winter, while in the day time it might be allowed to rise ten degrees higher, giving plenty of warm air at all times, and keeping the atmosphere rather moist than otherwise. Here a great quantity of very valuable plants would be at home, and here too, many plants which generally as greenhouse plants are found difficult to manage, would be found to grow to our perfect satisfaction. Those who cannot spare a house for this purpose, should devote a good sized pit to it.

The intermediate house would take many plants generally considered greenhouse plants; but still as many early-flowering greenhouse plants require to be kept cool to retard their blooming season as much as possible, it will be well to arrange the plants in the greenhouse so that those which require it may be protected from draughts or cold currents of air, while others may be fully exposed to a free flow of fresh air, at every favourable opportunity. Thus where there is no better accommodation, such plants as *Boronias*, *Gompholobiums*, *Leschenaultias*, *Pimeleas*, *Eriostemons*, *Polygalas*, and the like, must be placed at the warm end of the house; then may follow, *Chorozemas*, *Phænocomas*, *Aphelexis*, *Zichyas*, and similar plants, while the cold end will be occupied by *Azaleas*, *Heaths*, *Epacrises*, and other hardy plants, which will not be injured by a free exposure to air, even in mid-winter.

Heaths, however, when it can be so managed, should always have a house to themselves, as it is impossible to do justice to them and other greenhouse plants in the same house, heaths not liking a fire heat of more than 40°, while to do greenhouse plants justice, the temperature should never fall below 40°, except in unusually severe weather. Indeed for a general collection of Heaths two houses should be used; one to take the free-growing kinds, such as the ventricosa's, vestita's, perspicua's, hybrida's, and other soft-wooded kinds, which delight in a free interchange of air and a rather damp atmosphere, and the other to contain those hard-wooded species which, to prevent their being infested with mildew, must be kept in a dry atmosphere. Of these we may enumerate such as Massonii, ferruginea, gemmifera, aristata, ampullacea, tricolor, and their varieties. Heaths should never be subjected to fire heat except in cases of absolute necessity, and we would at any time rather see the thermometer at the freezing point on opening the house in a morning than at a temperature of 40°. Heaths detest fire heat, and therefore where it can be so managed it will always be found better to protect the Heathery by external coverings in severe weather than to use fire heat except under the most necessitous circumstances.

The stove, where an intermediate house is used, should be kept at a minimum temperature of from 55° to 60° during the dormant season; but when the whole collection is kept in one house, it will be advisable to keep the dormant plants, such as *Ixoras* which have set their bloom, *Dipladenias*, *Allamandas*, *Stephanotis*, &c., at the cold end of the house, where they can have abundance of air in favourable weather, while the growing plants must be kept at the warm end. Endeavour to keep a gentle bottom heat, and then you need not fear a low atmospheric temperature. The atmosphere of the stove should always be kept moderately moist, especially when strong fires are used, and give all the air possible in favourable weather. These hints, we trust, will be found of service to amateurs and those who have not devoted much attention to the winter management of the better kinds of stove and greenhouse plants.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR OCTOBER.

Abelia floribunda. Noticed page 188 of our Magazine. The introduction of this pretty little pendulous shrub to our gardens was through the nursery of Mr. Booth, of Flottbeck, near Hamburgh. He obtained it from Rathsack, a Dane, who was sent to Mexico by the Danish Government, and whose plant, purchased by Mr. Booth in 1842, was named "Shrub with the red bell flowers; Mirador."—*Bot. Reg.*, 55.

Achimenes pyropæa. A charming little plant, in an intermediate form between *A. coccinea* and *rosea*, having the bright scarlet flowers of the former, and the habit of growth and foliage of the latter. In brilliancy of colour it far surpasses either. In cultivation this species has the advantage of coming much earlier into bloom than the old *A. coccinea*, which seldom can be brought into flower before August, which is too late for summer exhibitions. It is a native of Guatemala, whence it was lately introduced by Mr. Skinner.

Achimenes Skinneri. This is a very handsome and distinct species, forming a link between the tall and dwarfer kinds, being exactly intermediate between *A. grandiflora* and *hirsuta*. The flowers are about the shape and size of those of *A. grandiflora*, and, like them, are quite flat and round; the eye is large; the throat yellow and spotted; and the spreading limb a bright rose colour.—*Hort. Jour.*, *vol.* ii., *p.* 293.

Æschynanthus longiflorus. An eminently handsome plant, closely allied to *Æ. speciosus*, but unquestionably distinct; the differences being equally apparent in the dried native specimens as in the living ones. Much of the beauty of *Æ. speciosus* is due to the varied colour (red and yellow) of the corolla; in the present, to the rich uniform puce of the entire flower. Here the mouth of the corolla is much contracted, with the segments or lobes erect: the style scarcely exserted beyond the corolla, the stamens very much so;—in *Æ. speciosus* the style is very much exserted, the stamens scarcely so at all. It was introduced by Messrs. Veitch and Son, of Exeter, from Java, through their collector, Mr. Thomas Lobb.—*Bot. Mag.*, 4328.

NEW, RARE, OR INTERESTING PLANTS, IN FLOWER, IN THE DIFFERENT GARDENS AND NURSERIES IN AND ABOUT LONDON.

Acacia linifolia. In the gardens of the Horticultural Society at Chiswick is now flowering a very remarkable and singular-looking *Acacia*; particularly from its habit, having narrow leaves two or three inches long. The flowers are globular, similar to the other species in form, and are produced in abundance. When in good flower, the plant is both graceful and interesting, and certainly worth cultivation.

Calomeria spe. nov. A very useful plant of the Aster family, which blooms so late as September and October in the flower-garden, is decidedly an attraction. The individual flower perhaps may not come strictly within the notice of the florist, from its petals being thin and open, though it produces the bloom freely, is a delicate lilac colour, and about an inch and a half in diameter. In the nursery of Messrs. Knight and Perry, we found it beautifully in flower.

Conradia floribunda. A new genus, evidently allied to the Gesnera family, is now in flower in the nursery of Messrs. Knight and Perry, Chelsea. The plant is very neat and small, leaves the same, and of a varied and rich green, specimens having upwards of a dozen flowers expanded, not being above two inches high and four inches in diameter. The flower about an inch and a half long, of a deep though rich scarlet, shooting out from among the rich foliage makes it one of the prettiest little plants we have lately seen.

Dipladenia nobilis. A handsome and graceful species lately developed its flower in the stove of Mr. Glendinning, Chiswick. The plant has a large hard woody tuber of a dark brown colour, two or three inches in diameter; from the upper part or neck the shoots are produced, which after running three or four feet the flower spike makes its appearance, holding six or more blooms of a beautiful white, slightly tinged at the edges with a rosy pink. The colour of the throat is a deep carmine, which extends down the centre of the petals, gradually shading off until lost in the white, forming a star-like appearance; at the bottom of the tube there is a band of dark chocolate dividing a bright yellow from the carmine. The flower is two inches and a half long, length and spreading to about two inches in diameter. It has beautiful foliage of a bright glossy green, much ribbed; and is a native of South America.—Professor Lindley, while referring to the above, at the Horticultural Rooms, stated, that there were a great number of plants which had been sent into this country, under the name of Echites, and from their treatment not being understood, were no doubt thrown away, from the difficulty of getting them to bloom. He cautioned parties on receiving seeds under the name of Echites to keep them, as there were few of the species but what were worth the most extensive cultivation.

Heliotropium hybridum Voltaireanum. Mr. Cattleugh, of Hans Place, Sloane Street, Chelsea, has this fine variety in good flower. It is similar in form and size to the common garden variety, differing in the great essential,—viz., colour, which is a deep violet purple; and has the same delicious perfume. The foliage is a dark though rich green, and the variety is everyway a most useful and ornamental one both for the green-house and bedding out.

Justicia carnea. In the same collection we found this fine plant remarkably well grown and flowered. The specimen was more than three feet in diameter and about two feet high, densely filled with foliage, rising above which were an immense number of heads of bloom of a delicate pinky flesh colour. The plant was most attractive from its excellent cultivation.

Miltonia Clowesii. At the October meeting of the Horticultural Society, in their rooms, Regent Street, was exhibited a noble specimen of this beautiful *Miltonia*, sent by Mr. Craggs, gardener to Sir Thomas Acland, Bart., Killerton, Devon. The specimen was one of some years' growth, and in fine health, capable of supporting the large mass of blooms it produced, having upwards of nineteen flower-scapes laden to profusion with its gaily variegated flowers, forming a picture such as to make us regret we do not see it oftener; and at the same time affording us an opportunity of recording the skill of the exhibitor.

Plumbago sp. nov. In the nursery of Messrs. Knight and Perry, King's Road, Chelsea, there is now flowering one of the most superb-looking plants it has been our lot to record for some time past. The genus nearest approaching it is the *Plumbago*, but most probably it will prove a new genus altogether. Some idea of its great beauty may be imagined when we state that the specimen is about two feet high and thirty inches in diameter, densely grown, and having upwards of one hundred and eighty bunches of bloom, each head expanding four or five flowers of the most intense and dazzling bright blue, relieved by a white throat; the flower is about three parts of an inch across. The number of buds each head holds averages from ten to thirty, so as to keep up a long succession of bloom. The habit is that of a half woody plant, very handsome and compact in its growth; and will be the most useful plant for bedding out or to grow as a specimen for exhibition in the greenhouse we ever met with. It was introduced from China, we understand.

OPERATIONS FOR NOVEMBER.

That part of a garden at this season of the year, which usually engrosses a great share of attention, is the locality where new features, by alterations and improvements, are being introduced. It is very naturally the case; and the degree of interest evoked is in proportion to the nature or magnitude of what is in progress. Whatever is the character or extent of anything in the shape of new work, it will be a wise proceeding, wherever there is a possibility of its being done, to carry forward such business with all despatch. The recollection that newly-made roads, or walks; fresh-laid turf; removed earths; recently planted trees, and so forth, are severally the better for having all of the winter season allowable, to enable each to become settled, or established, coupled with the uncertainity of our climate, ought to be the only stimulants required to assist in ensuring these matters a first consideration. Such affairs seldom engage attention to the extent their importance entitles them to receive. There are grounds on the score of economy, as well as more important reasons, to justify the bringing of proceedings of the nature of those in question thus briefly under review.

In many places and in more than a solitary instance in each we frequently meet with, through summer and autumn, brown glades and patches of lawn; ugly fissures in newly-made ground, and dead or dying trees and shrubs, forcing themselves, by their unsightly appearance, into notice; and these evils often exist where neither labour nor expense, at a particular season, may have been spared to prevent them doing so. Sometimes, we too well know, unavoidable causes produce the state of things above mentioned, but it is to be feared, it is an exception rather than the rule where their agency is justly chargeable with blame. New work, hurriedly and imperfectly done, as a natural consequence of, and in conjunction with, its being performed late in spring, is a sure prelude, in a greater or less degree, to such contingencies as those to which attention has been drawn.

Those who have anything in the way of planting to do, from forest trees and ornamental things down to simple biennial and annual plants, ought not to lose any opportunity of prosecuting that branch of their labours. Now is an excellent time to stock the reserve ground or nursery department. And we would observe, that it is matter of regret culturists do not more generally provide themselves with an appendage of the kind mentioned. It is a great thing to have a little store of specimen ornamental trees and shrubs to fall back upon at any time; but more pleasure is derived from doing justice to the class of things to which allusion is made, by enabling them fully to develope their true characters and beauties; and from growing and managing them in one's own way.

Other occupations in the open air this month, are partially or otherwise pruning a variety of things, finally or in part, as they may require, securing and supporting them at the same time; protecting plants, &c., against winter; breaking up vacant flower beds and ground which is not going to be occupied through that season; collecting soils and composts; and preserving every place as orderly and clean as circumstances will allow.

Plant-houses, of all grades, should be rendered as attractive as ever their capabilities will permit. In the conservatory principally devoted to a display of flowers, any plants, whether climbers, twiners, or others, that have done blossoming, may, according to their nature, be pruned, or otherwise made to occupy little space, that their neighbours in bloom may be better accommodated. The same may be said of all plant erections where flowers are an object. The latter ought to be maintained sufficiently dry to prolong their continuance in perfection. Growing plants must not, by any means, be slighted; but placed where they will find conditions suitable to their state. Orchids, or any plants which make their developments at this time of year, are included in the last direction. An over-abundance of moisture, in any shape, must be particularly guarded against in the case of *Orchidaceæ*; and that tribe, in common with all plants, should have abundance of fresh air admitted to them whenever circumstances will permit.

Expose, by turning regularly, all sides of specimen plants, that are not fixtures, to an equal degree of light. In many collections there are specimens which, in consequence of their being one-sided and ugly, will not bear thus exposing. Such it will be better to indulge by allowing them to grow in the shape they have hitherto done, until young ones of a more modern conformation can be raised to take their places. Allow every specimen and other plant as much space as possible, not only for the sake of their welfare, but also on account of their appearance.

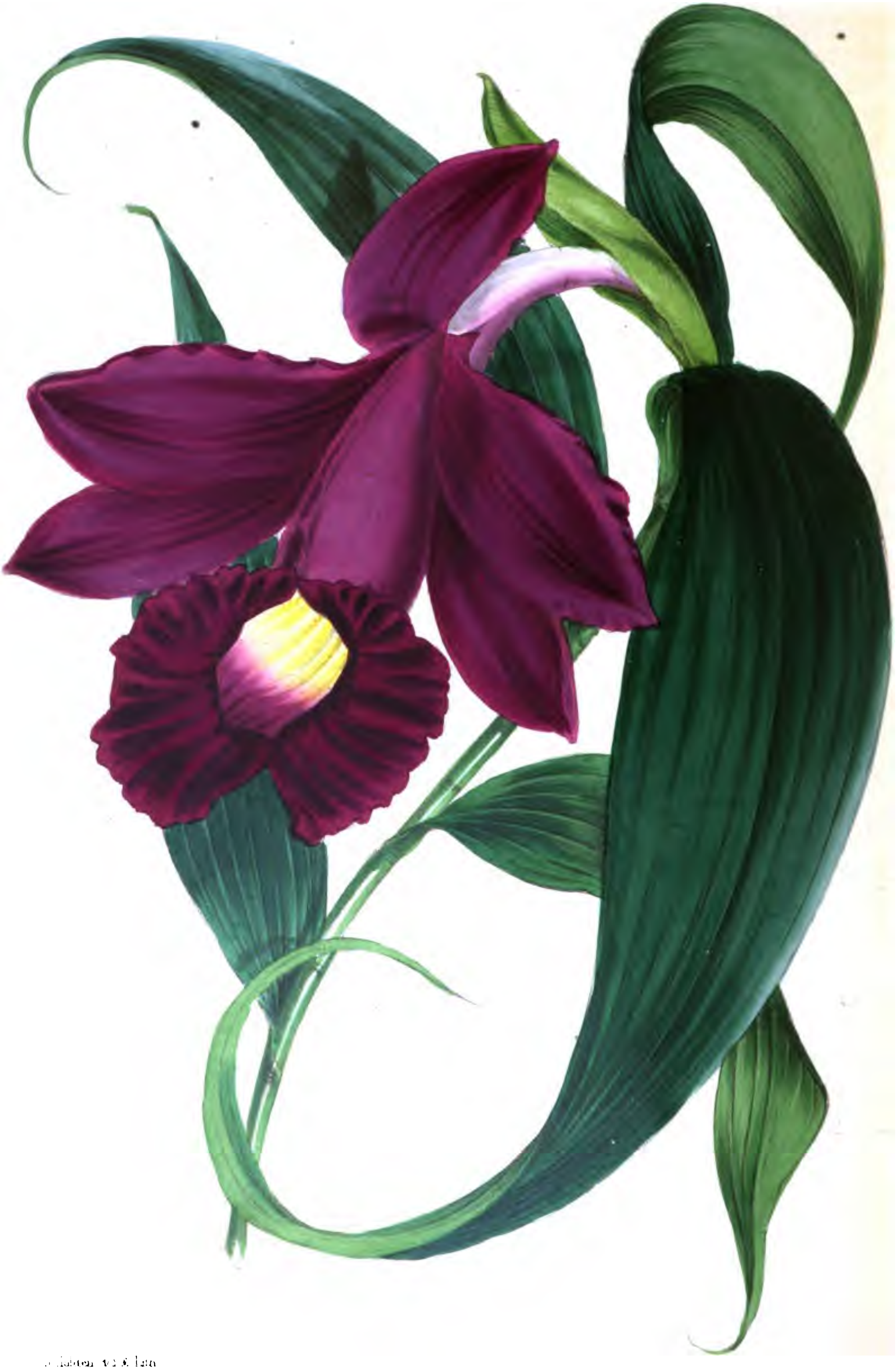
In order to hinder the flower-garden stock of plants from making improper growth, fully expose to the open air whenever it can be done without the prospect of their being injured by the process, and give each as much room as can be allowed, to aid in effecting the same object. Plunge those preserving in cold pits, in coal-ashes, sawdust, or some such material.

Add *Indigoferâ decora*, that is if you are not already fortunate enough to possess it, to your collection of plants which are esteemed for flowering this time of year; and continue to furnish suitable things, in proper proportion, to the several forcing departments, for the purpose of keeping up the display of flowers.

Florist flowers, as Auriculas, Pinks, Pansies, and others, should, in case of need, be sheltered against excessive wet and cold, and be allowed to remain in undisturbed repose.

Flues and all heating apparatus ought to be got and held in readiness to put in action whenever their services may be required.

In wet weather or leisure days, plants may be named, seeds dressed or properly packed away, plant-trellises made, and a variety of occupations of that class may furnish employment.



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Sobralia macrantha splendens

SOBRALIA MACRANTHA SPLENDENS.

(Splendid Large-flowered Sobralia.)

Class.
GYNANDRIA.

Order.
MONANDRIA.

Natural Order.
ORCHIDÀCEÆ.

Generic Character.—*Perianth* large, coloured, nearly equal. *Sepals* spreading, sometimes reflexed. *Petals* erect. *Lip* hollow, clasping the column, narrow at the base, margins plaited, at the top somewhat two-lobed. *Column* elongate, marginate, club-shaped, separated at the top into three lobes, middle lobe hood-like, and bearing the anthers. *Stigma* marginate, having two nectariferous glands at the base. *Anthers* terminal, stipitate, partly four-celled. *Pollen-masses* four, compressed, pulverulent.

Specific Character.—*Plant* a perennial. *Stems* reed-like, growing six feet or more high. *Leaves* ovate, acuminate, rigid, plaited. *Flowers* terminal, large, and showy, betwixt seven and eight inches in diameter, rich crimson. *Sepals* spreading, lanceolate, acuminate. *Petals* oblong. *Labellum* emarginate, flat, smooth.

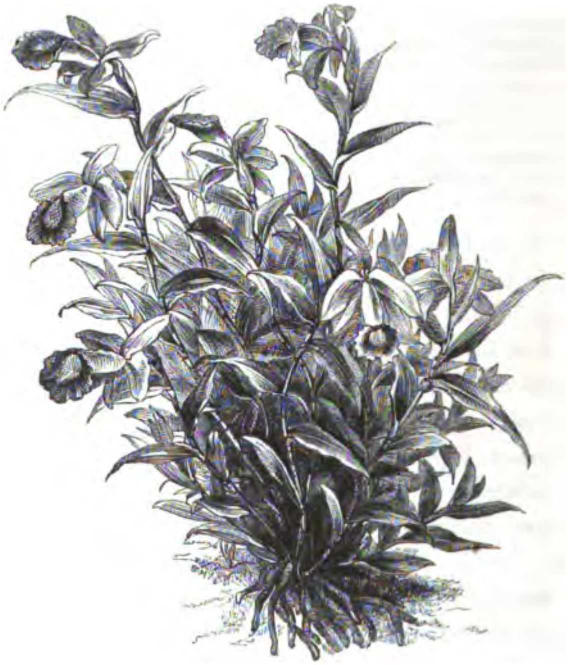
Variety Splendens.—*Plant* growing only two to three feet high, *flowers* large, deep, rich, crimson-purple; in other respects like the species.

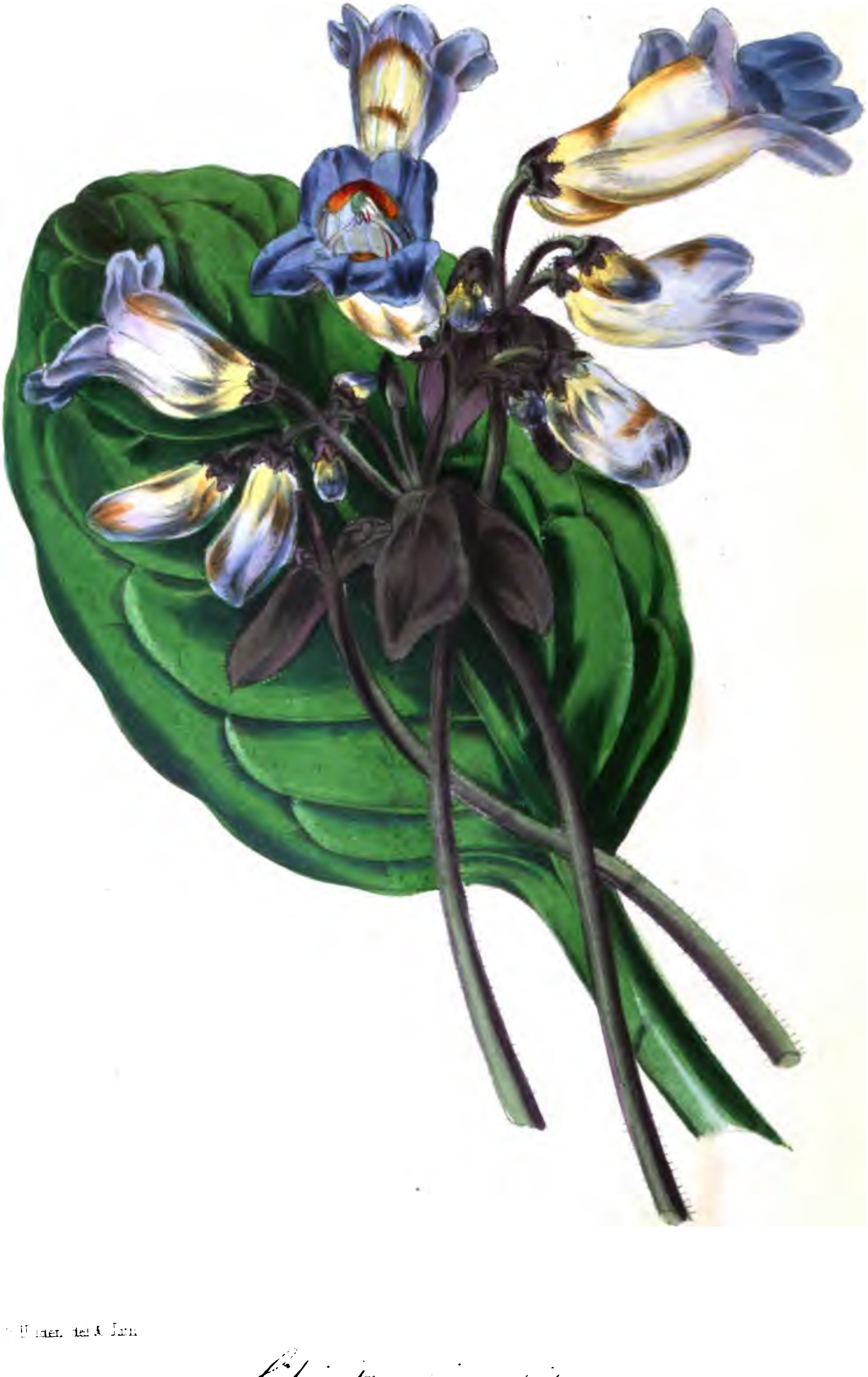
Of this fine genus Dr. Lindley remarks in the *Sertum Orchidaceum* that "the genus Sobralia is one of the most remarkable among Orchidaceæ, with its lofty reedy stems, large lily-like flowers, and stiff plaited leaves, which resemble those of the smaller kinds of Palm-tree. It is found in Peru, in Brazil, and in Mexico, where the species are amongst the most stately inhabitants of the bush. They consist of terrestrial perennial plants, with simple roots, and stems not uncommonly growing three times as high as a man, very rarely branched, and thickly clothed with leaves. Their inflorescence consists of terminal racemes, which are straight or flexuose, sometimes axillary and bifid, and loaded with snow-white, pink, crimson or violet flowers. The lip of all the species is wrapped round the column, whence it appears as if funnel-shaped, and is bordered by a lacerated fringed edge. The species inhabit dry, sunny, rocky, and very hot places, where they often form extensive thickets. A few are sweet-scented; and of some the flowers last for only a short time."

For the opportunity of figuring the subject of our present plate we are indebted to Messrs. Rollisson's, of Tooting, in whose nursery this magnificent species flowered in July last. These gentlemen came into possession of it about two years ago, having purchased it amongst other plants at one of the sales of South-American Orchids collected by Mr. Skinner. We believe it is a native of Mexico.

The culture of this plant, although peculiar, is not difficult. It requires the temperature of a damp and well shaded stove. The heat, however, to which it is exposed should not be too great, or the plant will at once show signs of suffering. The soil proper is a mixture of turfy peat two parts, and turfy loam one part; these must be roughly broken together. Give plenty of pot room, as the roots will not bear to be cramped. Set the pot containing the plant in a pan of water, which should always be kept full during the season of growth, but at the time of the plant's repose the pan of water must be dispensed with. The subjoined wood-cut exhibits the habit of the plant.

The name is given in honour of Don Francisco Martin Sobral, a Spanish botanist.





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Chirita sinensis.

CHÍRITA SINENSIS.

(Chinese Chirita.)

Class.
DIDYNAMIA.

Order.
ANGIOSPERMIA.

Natural Order.
GESNERÀCEÆ. (*Veg. King.*)

Generic Character.—*Calyx* tubulous, pentagonous, valvate. *Corolla* monopetalous, tubular, campanulate, ventricose beneath; limb bilabiate, five-lobed, lobes rounded. *Stamens* five, two fertile, and three smaller ones abortive. *Anthers* cohering, kidney-shaped, naked, one-celled. *Ovary* a silique. *Style* one. *Stigma* bipartite, lobes oblong and spreading. *Capsule* two-celled.

Specific Character.—*Plant* a stove perennial. "*Leaves* springing directly from the root. *Petioles* short, but very thick and triquetrous, expanding into an elliptical, ovate blade, the outer ones the longest, all hairy, crenate, obtuse, wrinkled, pale, and with very prominent veins beneath. *Scape* a span and more high, at first curved downwards, then erect, stout, terete, clothed with copious, patent, red hairs, and terminating in a subtrichotomous, compound *corymb*, having at the base two large, deciduous, membranaceous *bracteas*. *Peduncle* and *pedicels* with coarse spreading hairs. *Calyx* small, with five ovate segments. *Corolla* large, lilac purple, yet varied with red and white; the tube inflated, but with a sudden compression towards the base beneath, forming a carina; *faux* open; *limb* two-lipped, upper *lip* of two, lower of three rounded lobes; within the corolla, on the lower side, are two linear, orange-coloured callosities; above, at the faux, a broad two-lobed one, of the same colour. *Stamens* two fertile with the *anthers* two-lobed, firmly united to each other, two sterile *filaments*, and one rudimentary *filament*. *Ovary* linear, glanduloso-pilose. *Style* short. *Stigma* one-lipped, bifid."—*Hooker*.

For the opportunity of figuring this beautiful little plant we are indebted to the fine collection at Readleaf, where we made our drawing in September last. It is stated by Dr. Lindley in the "Botanical Register," vol. iii., t. 4284, to be "one of the first results of any importance, from the voyage to China, by Mr. Fortune, on account of the Horticultural Society. It was sent home in a wooden case, and its beautiful large lilac fox-glove-like flowers were open when it arrived." This was in 1844; since that time other species, vying with it in beauty, have also been introduced into our collections; two of them have already been figured and described; *C. zeylanica*, in "Mag. Bot." v. xiii., t. 265, and "Bot. Mag." 4182, and *C. Walkeri*, in "Bot. Mag." 4327. They are both plants with rare attractions.

The habit of our present subject is intermediate betwixt *Streptocarpus Rexii*, and *Gloxinia speciosa*. Its season of flowering is very prolonged, under favourable circumstances continuing for many months together; and by the judicious management of several specimens of this plant placed in different temperatures, the season of bloom might be extended almost throughout the year.

In respect to cultivation, it will grow and flower freely in a warm greenhouse; but to have it in anything like perfection, a moist, but moderate stove-heat is necessary. It should there be placed as near to the glass as possible, and be well shaded from the rays of the sun, which otherwise are sure to scorch the leaves, and injure the growth. In such a situation, with a good supply of water to the roots, during the whole of the season of growth and flowering, numbers of robust flower stems will arise, and unfold themselves in succession during the whole of the summer.

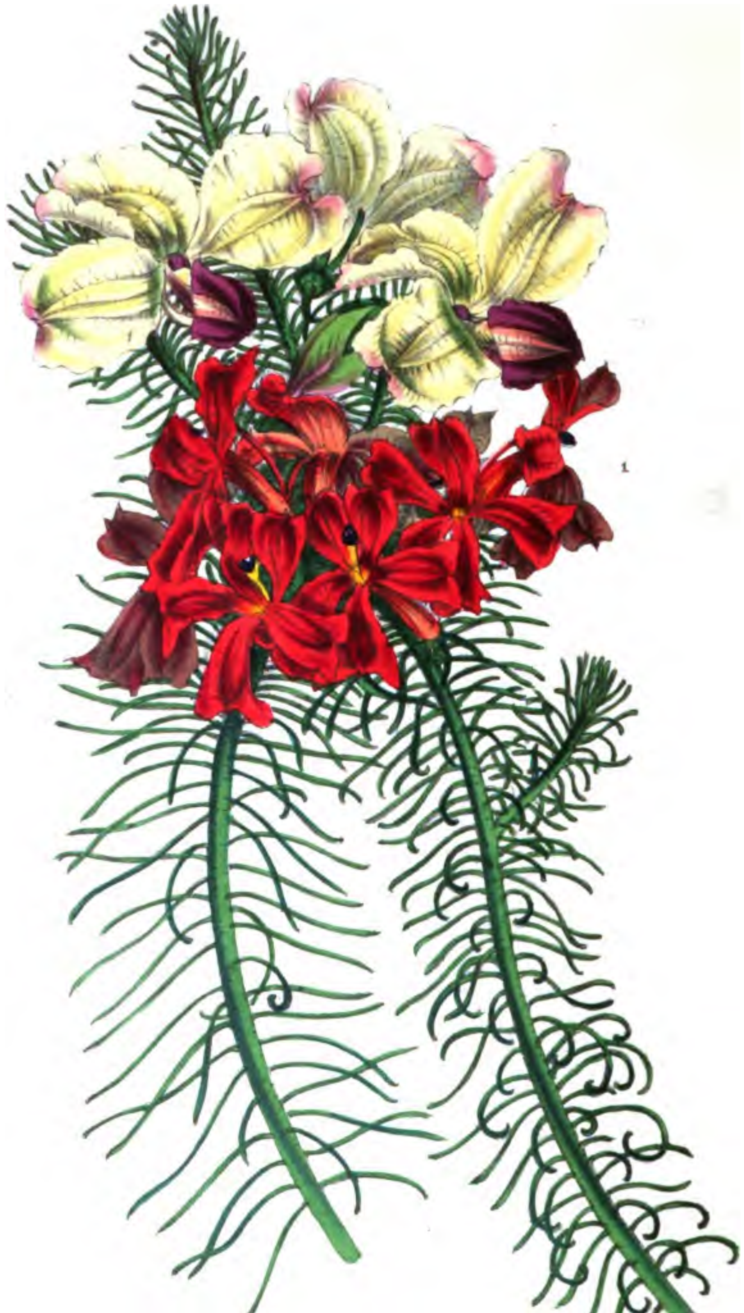
It might be well to mention here by way of caution in watering, that although this plant delights in a very humid atmosphere, it is impatient of having water poured over its leaves. If subjected to the usual process of syringing, it neither flowers so fine, nor do the leaves exhibit that rich healthy green, which is so desirable; and not unfrequently some of the larger ones prematurely perish.

When the growth and flowering are over, diminish the supply of water considerably; and throughout the winter give no more than is requisite to keep the soil in the pots from becoming dry and parched. The plants should also stand in a cool dry part of the stove, or be removed to the greenhouse until the return of spring.

The soil proper for it to be potted in, is a mixture of sandy peat, light loam, leaf mould, and sand, in equal proportions. The proper time for potting is in the commencement of the spring, when the plants show signs of growth after their winter's repose. Give a liberal watering previous to disturbing them, after which turn them out of the old pots, and without damaging the semi-torpid roots, remove a good portion of the old soil; place a handful of crocks as drainage in the bottom of each pot in which the plant is intended to flower, spread out the roots over the new soil, and when finished, give a supply of water with a rose, replace in the stove, and when the leaves begin to unfold themselves, treat as recommended above for the season of growth.

Propagation is effected by leaves cut off, laid on a pot of fine sand, and placed in a moist hot bed or other heat.

The generic name is derived from the vernacular appellation of one of the species.



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1 Leschenaultia splendens.

LESCHENÀULTIA SPLÉNDENS.

(Splendid Leschenault'a.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
GOODENIÀCEÆ.

Generic Character.—*Calyx* superior. *Tube* of the corolla cleft on one side; limb bilabiate. *Anthers* cohering at the time the flowers are expanded. *Grains of Pollen* compound. *Stigma* obsolete, in the bottom of the bilabiate indusium. *Capsule* prismatic, two-celled, four-valved, opposite valves septiferous in the middle. *Seeds* cubic or cylindrical, nucumentaceous. *Mag. Bot.*, vol. viii., t. 151.

Specific Character.—*Plant* an evergreen shrub, growing two feet high. *Stems* erect, smooth, and copiously branching. *Leaves* irregularly disposed, patent, reflexed, filiform, apiculate. *Flowers* produced in corymbs at the extremities of the branches, very showy. *Calyx* linear-awlshaped, nearly as long as the tube of the corolla, bractless. *Corolla* five-parted, segments cuneate, nearly equal, as long as the tube, of a brilliant scarlet; tube paler. *Stamens* five, smooth. *Style* smooth; stigma two-lobed, with a bunch of glandular hairs near the termination.

When in "Mag. Bot.," vol. viii., t. 151, we figured *L. biloba*, we could not avoid expressing our admiration of this lovely genus of plants; their slender graceful habit, erica-like leaves, and the profusion of rich coloured flowers, which with very little trouble they are made to produce, were pointed out as qualities which rendered them deserving of all the praise which could be bestowed.

However high were the encomiums which, in vol. viii., we passed upon the blue species (*L. biloba*), we have now one perhaps fully equal, if not more than its match, in *L. splendens*, the subject of our present plate. When the plant is in full bloom, and literally covered with brilliant scarlet flowers, it is not easy to find an equal which would occupy as a shrub only a similar space, and of so humble a growth; indeed, its dazzling effect upon the sight can only be equalled by some of the brilliant coloured verbenas.

It is a native of Australia, and was introduced from thence by Messrs. Lucombe, Pince, and Co., of Exeter, through Mr. Drummond, who discovered it growing with several other species and varieties in the neighbourhood of Swan River, and who sent seeds of it to the above-named gentleman.

It is a greenhouse plant requiring the same treatment as recommended for *L. biloba*, and is propagated by cuttings.

The specimen from which our drawing was made was grown by Mr. Ayres in the fine collection of J. Cook, Esq., Brooklands, Blackheath, where it flowered in profusion during the whole of the autumn. In August our drawing was made.

The name was given in honour of M. Leschenault, a French traveller, and botanist.

LESCHENÀULTIA ARCUÀTA.

(Drooping Leschenaultia.)

Generic Character.—See above.

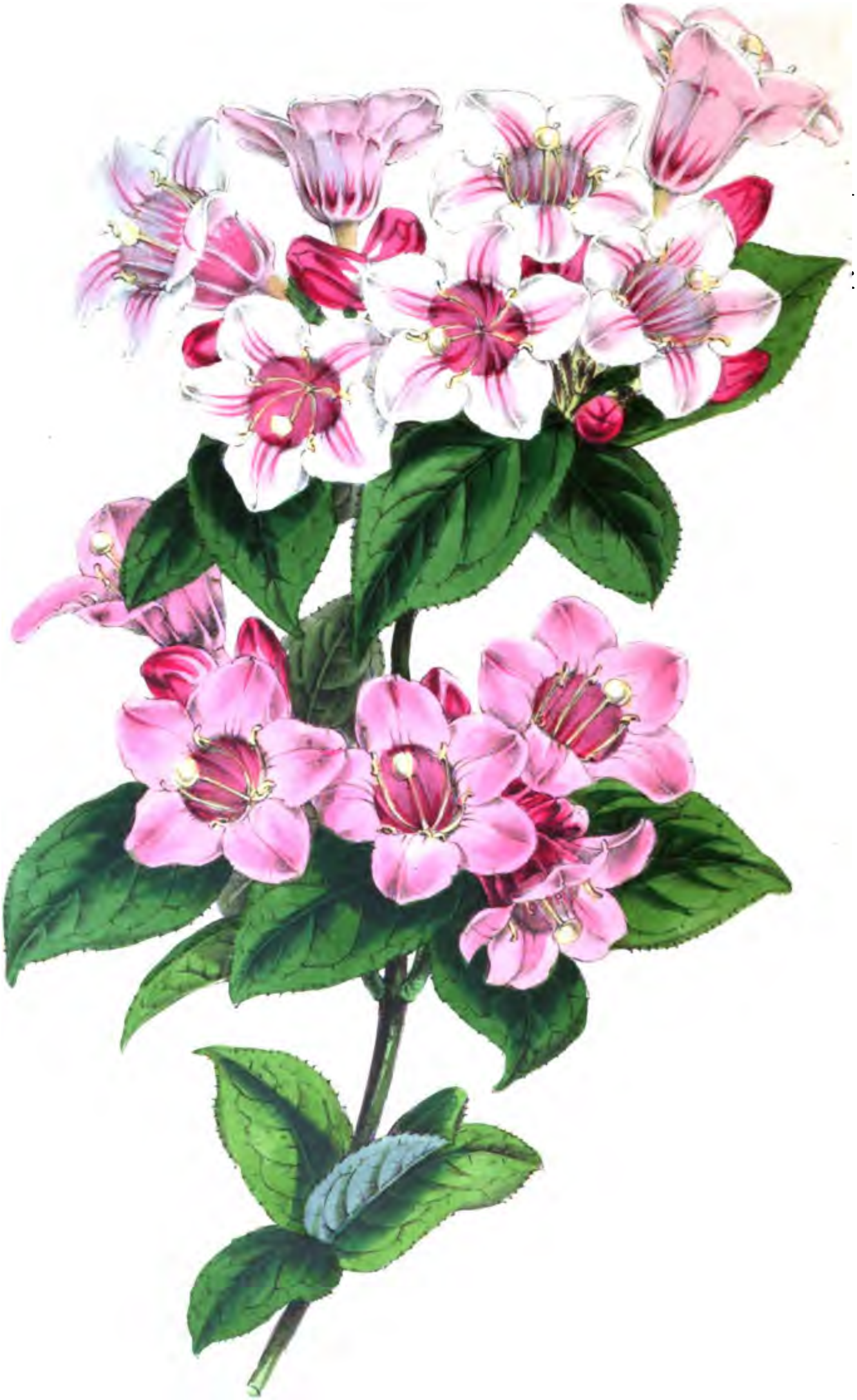
Specific Character.—*Plant* an evergreen shrub, growing a foot-and-a-half high. *Branches* numerous, spreading, disposed to be prostrate, small branchlets growing more upright. *Leaves* irregularly disposed, patent, reflexed, filiform, acute. *Flowers* large, solitary, terminal. *Calyx* in five segments, each oblong, acute, somewhat concave, as long as the tube of the corolla, bractless. *Corolla* tubular; tube short, and slightly ventricose on the under side; limb bilabiate; lower lip cut into three large, spreading, bifid, obcordate segments, of a bright yellow colour; upper lip in two smaller, obovate, upright segments, which close together and conceal the stamens and style; these are red, tinged with purple. *Stamens* five, smooth. *Style* long, slender. *Stigma* two-lobed.

Although in point of splendour this plant will bear no comparison with *L. splendens*, yet it is a really handsome object when in full and vigorous growth, forming a spreading bush from three to four feet in diameter, and variegated all over with its curiously coloured flowers.

It was raised from Swan River seeds collected by Mr. Drummond, and sent to Messrs. Lucombe, Pince, and Co., of Exeter, in whose extensive nursery it has flourished, and been spread through the trade; and also into many private collections in the country.

For the opportunity of making our drawing we are indebted to Mr. Low, of Clapton, in whose nursery it flowered profusely last August.

It is a greenhouse plant, requiring the same treatment as the other species.



J. Holden. del & Lith.

Weigela rosea.

WEIGÈLA RÒSEA.

(Rose-coloured Weigela.)

Class.

PENTANDRIA.

Order.

MONOGYNIA.

Natural Order.

CAPRIFOLIÀCEÆ.

Generic Character.—*Calyx* tubular, tube oblong, limb five-cleft. *Corolla* funnel-shaped, five-cleft, regular, equal-sided at the base, lobes spreading. *Stamens* five, sometimes exserted. *Ovary* one-celled. *Stigma* doubly capitate. *Style* with a reniform hairy gland, fixed immediately at its base; gland not adherent to the corolla.

Specific Character.—*Plant* a deciduous shrub. *Stems*; erect, hairy, bearing a profusion of opposite hairy branches. *Leaves* opposite, elliptical, acuminate, serrated above, nearly smooth below, on very short *petioles*. *Peduncles* axillary and terminal, the latter bibracteate, and usually dichotomous. *Flowers* large, rose-coloured, disposed in pairs. *Calyx* bilabiate, and cut into five lanceolate, acuminate, unequal segments. *Corolla* monopetalous, tubular, five-parted, segments equal, smooth, ovate, patent, somewhat reflexed, tube slightly ventricose. *Stamens* five, smooth above, hairy below. *Style* longer than the stamens; *stigma* doubly capitate.

Perhaps, taking it altogether, a more beautiful hardy shrub than the one now figured has not been brought into this country for many years. It is one of the recent introductions of the London Horticultural Society, in whose garden at Turnham Green it flowered beautifully last April, when our drawing was kindly permitted to be made.

It is a native of China, where it was first discovered by Mr. Fortune, "growing in a Mandarin's garden on the Island of Chusan, and was then literally loaded with its fine rose-coloured flowers, which hung in graceful bunches from the axils of the leaves, and the ends of the branches."

It is stated by Mr. Fortune to be "unknown in the southern provinces of China, and is not met with on the Chinese hills in a wild state, it is therefore just possible that it may have been originally introduced to China from Japan; this, however, is only conjecture. In the parts where it is found, the thermometer sometimes sinks within a few degrees of zero, and the country is frequently covered with snow; and yet in these circumstances it sustains no injury. It forms a neat, middle-sized bush, not unlike a Philadelphus in habit, deciduous in winter, and flowers in the months of April and May. One great recommendation to it is, that it is a plant of the easiest cultivation. Cuttings strike root readily any time during the spring or summer months, with ordinary attention; and the plant itself thrives well in any common garden soil. It should be grown in this country as it is in China, not tied up in that formal unnatural way in which we frequently see plants which are brought to our exhibitions, but a main stem or two chosen for leaders, which in their turn throw out branches from their sides, and then when the plant comes into bloom, the branches, which are loaded with beautiful flowers, hang down in graceful and natural festoons."

Such is the account given of the introduction and subsequent treatment of this beautiful shrub in the "Journal of the Horticultural Society." As the plants which have already been distributed through our collections are too small at present to risk in the open borders, and are therefore chiefly cultivated in pots, some years must necessarily elapse before the true value, as a shrubbery plant, of this introduction can be fully estimated. Little doubt, however, need be entertained that if the plants are placed in situations where they will not be exposed to boisterous and very cutting winds, if the subsoil be perfectly dry, or rendered so by drainage, and the rays of the sun have free access to ripen the wood properly, they will endure our most severe winter without protection.

The genus *Weigela*, which originated with the Swedish traveller Thunberg, has been referred by modern botanists to *Diervilla*, and several species of it inhabiting Japan have been published by Messrs. Siebold and Zuccarini under that name. But although in many technical characters it approaches that genus, yet it is very different in habit. Both are remarkable among Caprifoils for their one-celled ovary, cut into four false cells by the projection of a pair of double placentæ, which do not unite in their axis, and both have a double capitate stigma, and a remarkable epigynous gland. But while in *Weigela* that gland is free, in *Diervilla* it adheres to the corolla; and in *Diervilla* the corolla is irregular and gibbous on one side at the base, while in *Weigela* it is regular and equal sided at the base.*

The greater part of Caprifoliaceous plants are favourites in our gardens; they consist of fifteen genera, all shrubby, with the exception of *Karpaton hastatum*, two species of *Triosteum*, and three of *Sambucus*. The greater part are hardy; a few require the shelter of a wall or other slight protection; some need the temperature of a greenhouse, and two or three are stove plants.

The genus Abelia consists of small weak-growing but pretty shrubs, bearing long tubular flowers, like those of the Honeysuckle (Caprifolium). Five or more species are known, and three—*floribunda*, *rupestris*, and *triflora*—are already introduced into Britain. The first-mentioned is by far the handsomest at present known. See pages 188 and 238. *A. rupestris* and *triflora* are both very fragrant; the first forms a small spreading bush, with deciduous, bright-green foliage; the flowers are pure white, and come in pairs from the axils of the leaves belonging to the short lateral branches. It remains in flower a long time. *A. triflora* assumes more the form of a tree, its flowers are produced by threes, and form corymbs at the terminations of the branches; their colour is a pale rose. As it respects the cultivation of this desirable genus, *A. floribunda* "requires a treatment intermediate between the stove and greenhouse; that is to say, during the growing season it requires to be treated like a stove plant and kept rather moist, but afterwards, when the flowers are over, it should be transferred to the greenhouse. It grows freely in a mixture of sandy loam, peat, and leaf-mould, and strikes freely from cuttings."* *A. rupestris* "has hitherto been treated as a greenhouse plant, but will probably prove hardy enough to stand out of doors in mild winters. The soil which appears most suitable is rough sandy loam, mixed with a little peat. Being of free growth, an ample supply of water is necessary during the summer season. In winter nothing different from the general treatment of greenhouse plants is required. It is propagated from cuttings of young wood, in the usual way."† *A. triflora* will endure about the same amount of cold as *Rhododendron arboreum*, and should therefore be kept in a cool airy greenhouse, and be potted in a mixture of equal parts of peat, loam, and sand.

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* Dr. Lindley in *Journ. Hort. Soc.*, i., 66 and 190.

Alsenosmia.—With this genus we are too imperfectly acquainted to offer any remarks on culture.

Caprifolium.—With the exception of three Chinese species, *confusum*, *japonicum*, and *longiflorum*, all are perfectly hardy, and these three exceptions require no more than the shelter of a common wall. It is true *L. javanicum* and *L. Loureiri* are greenhouse plants, but it is not quite certain whether they are yet introduced. All the species are ornamental climbers of very easy management, being well suited either for covering trellis work, arbours, or training against walls. They will thrive in any common light soil, and are increased by cuttings of the ripe wood taken off at the close of the summer, and planted in a warm situation on a south border; the tender kinds should have the shelter of a hand-glass.

Diervilla.—Five species of *Diervilla* are introduced, four of which, being natives of Japan, can be scarcely said to be perfectly hardy; although they will bear a mild winter tolerably well, yet without some slight protection they suffer from severe frosts. *D. canadensis* is a well-known deciduous shrub, growing freely in common garden soil, even in the most exposed situations. The other species also grow well in any light sandy soil, and are readily increased by cuttings, those of the *D. canadensis* put into the open ground in autumn and spring, after the manner of those of Laurels. The cuttings of the other species should be covered with a hand-glass. Suckers are also produced in abundance, by which they are likewise produced plentifully.

Karpaton hastatum.—The only known species is stated to be a hardy herbaceous plant, from Louisiana, growing in a border of sandy peat earth, and propagated by division of the roots.

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* *Bot. Reg.*, t. 55.

† *Hort. Jour.*, i. 63.

Leycesteria formosa.—This is a beautiful shrub, flowering during the whole of the summer months. It grows with great freedom in any rich light soil, but should always be planted in a warm and sheltered situation; for if much exposed to cutting winds, its tender foliage is sure to be destroyed, and the plant will always look ragged, and never assume its natural habit of luxuriance. It is a splendid shrub for the front of a shrubbery. It is easily increased by cuttings planted in autumn or spring, or by seeds, which ripen in abundance.

Linnæa borealis.—The only species is a well-known trailing evergreen bog plant. This elegant little shrub never thrives except when planted in peat earth. It forms a very graceful pot plant, if grown in a shady situation; but if exposed to the sun, it is impossible to make it grow well, whatever care and pains may be taken; to have it in perfection it should be planted out in a shady border of peat earth, where the sun can never shine upon it, and where it will be perfectly free from the drip of trees; in such a situation it will luxuriate and spread over a great surface, producing abundance of pretty flesh-coloured and somewhat fragrant flowers at the extremity of every branchlet; the trailing branches will also strike root at almost every joint that touches the ground, by which means the plant is easily increased.

Lonicera, Sambucus, and Symphoricarpus.—All the species of these three genera are, (with the exception of three kinds of Sambucus) hardy shrubs of the very easiest culture. They grow in any common garden soil, and are increased readily by either suckers, cuttings of the ripened wood planted in the ground either in autumn or spring, or seeds, which are produced in abundance.

Triosteum.—Two species have been inhabitants of our gardens for more than a century; being both natives of North America, they are perfectly hardy, and will grow in any light garden soil, although they prefer a border of peat earth where they are partially shaded from the sun. Propagation is effected by division of the roots.

Tripetelus and Valentiana.—Two genera, with the habits of which we are little acquainted.

Viburnum.—A large genus of shrubs, the greater part of which are deciduous, a few are evergreen, all are ornamental, and well suited for shrubberies. *V. tinoides* and *V. villosum* are stove plants, and *V. odoratissimum*, *rugosum*, and *tomentosum* require the shelter of the greenhouse. These should be potted in a mixture of peat and loam, and are propagated by layers and cuttings.

All the other introduced species are perfectly hardy, will grow in any light soil, and are increased both by suckers, layers, and cuttings planted in the open ground.

WINTER REPOSE OF PLANTS.—DECEMBER.

By the time this article shall be in print, the horticultural winter will be fairly established, and it is therefore needful to resume those remarks on the treatment of plants which were alluded to in the article of November. But previously it will be useful to view, retrospectively, the "Characteristics of the Seasons," which, in No. clxiv., and at page 177, were brought up to the end of July.

Every locality has its own peculiar weather; but in that where the writer resides, *August* became so thoroughly dry, that the grass lost its verdure, leaves fell from deep-rooted elms, till they strewed the roads, and all vegetables became weak and flaccid. A few opportune showers supported life, and that was nearly all. As a harvest month it was faultless, and in temperature was mild and very equable, the average of day and night being somewhere about 64°. *September* had in it eleven days more or less rainy; these rains were very useful, but they merely penetrated the surface. The temperature was much reduced. This want of rain-water produced much inconvenience in all the floral departments, as of all appliances it is the most natural and clean, and, where received by internal tanks supplied from the glazed roofs of the houses, is apt to become rather offensive during the long absence of showers. Amateurs suffer more than other persons under this privation, the quantity they are able to collect being trifling; but in a large establishment—as, for instance, that of Messrs. Rollisson—it abounds: there the utmost sweetness and perfect cleanness of leaf prevailed in every house we passed through. The sight was beautiful—it spake of attention, ample means, and resources.

October was gloomy at its commencement, with wind at north-east. The character changed with the wind, on the 8th day, to south-west, just one day before the great anticipated solar eclipse, which rain clouds entirely concealed in the south of England. Subsequently there were warm and sunny days, but several others, at intervals, in which showers fell abundantly. The month ended well—temperature 52° to 55°, finely-shaded clouds, and gentle air. As a whole, it has supported its character, and every vegetable and plant has prospered accordingly.

November opened in a style altogether striking, with all the brilliancy of spring: the sun shone with power, the blue tint of the sky equal to any that is seen in April, and the air altogether was bland and soft; minimum temperature of the night 52°. The second day was equally warm, and brilliantly sunny, air soft, from south by west, mid-day temperature stood at 60°, and in the sun 78°.

Here we can proceed no farther with the calendar, as time for the press must be given; and as it is not at all desirable to trespass on the charge of others who write monthly in this Magazine upon the treatment of Plants in erections of every description, we hasten then at once to a subject of painful interest, which also will embrace those theoretic principles that apply directly to the philosophy of artificial cultivation.

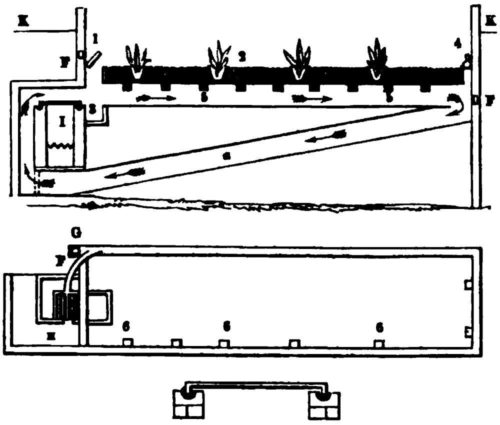
To do justice to this subject, and his own personal feelings, the writer lays aside for the moment the editorial form, and assumes that of the first person, since he is called upon to justify the practice and memory of a good man.

Mr. Meek, of Nutfield, in Surrey, is no more. His decease was particularly noticed in the "Gardeners' Chronicle" of October 24th. I knew Mr. Meek personally, though slightly; but being near his residence just as the fine weather of last May came in, I visited him, and was at once admitted to his full confidence. Prejudiced up to the very moment against the system, as it had been previously detailed, almost to nausea, I discovered, ere five minutes had elapsed, while seated in his elegant drawing-room, that it became my chief duty to listen to the flow of eloquence that proceeded from the lips of a scholar and a gentleman, zealous to enthusiasm, and assuredly convinced of the truthfulness of the theory which his mathematical principles had enabled him to develope. It was not until he had laid open his views upon *radiation*, and sketched upon paper the form and direction of the passing rays, thus rendering it clear, almost to positive demonstration, that *air itself was its own best medium of temperature*, altogether independent of *any visible heated surfaces*, that he attempted to introduce me to his erections.

We at first entered his stove, fully described by Mr. Meek in his article "Observations upon the Polmaise Method of Heating Garden Buildings," Journal of the Horticultural Society, vol. ii. pp. 49 to 71. This hothouse, 28 feet by 17, was covered with a span roof facing north and south, not steep. The furnace was erected at the east end, where the wall was carried up to the span; on the two sides and western end upright sashes met the glazed roof. The three outer walls which supported these sashes were left with twelve openings to act as ventilators for fresh air from without, the number of which to be left open or closed, being governed by existing circumstances. The pit for hot air, comprising also the flues or drains for the passage of the *low* situated cold air of the entire hothouse, was above 22 feet in length by 9 feet in breadth.

I saw this house and its furniture in May; the day was warm and sunny, but there had been fire over night, and therefore its effects could be correctly appreciated. The plants plunged were, I believe, chiefly the Jamaica Pine; they had not been long potted or introduced, and were in a full growing state. Finer or more healthy foliage could not be expected; the collection upon the shelves was miscellaneous, including some *orchids*. Nothing could be more promising; health appeared in every part and member: nor was this surprising when we consider the soft genial state of internal atmosphere, capable of perfect regulation by the action of warm air through the pit, or of cool air from without.

After an attentive survey of the hothouse, its warm air and plunging pit, the furnace, and all visible appliances, I left it, and we proceeded to view the *model* and projected improvements of the greenhouse. These would be important, and perhaps were carried into effect ere the decease of Mr. Meek: that event, however, precluded the possibility of a contemplated visit about the beginning of winter. To those who feel interest in the few adduced facts, I beg earnestly to recommend a careful study of the original article in the "Journal of the Horticultural Society." In the meantime, there was given in the "Gardeners' Chronicle" of Saturday, October 30th, p. 717—middle column—a plan of what is called *a Polmaise* pine pit by a gardener to the Duke of Leeds. The plan is but loosely described in words, but the wood-cut may convey a fair idea of the structure of Mr. Meek's inner or air-pit:



Reference to the Engraving.—1, Lid over tank; 2, Plunging material (old tan); 3, Brick tank, lined with cement, 3 feet by 1 foot 6 inches, and 9 inches deep; 4, Ventilator, closed; 5, Wood beams, 4 inches square, covered with slabs, over which turves are laid; 6, Ventilators along front and end of pit, to be opened at pleasure; *a*, cold-air drain; F, Flues; G, Chimney; H, Stoke-hole; I, Stove; K, Ground Level. The iron plate is set in a groove in the brickwork, filled with silver sand. The stove is built with fire-bricks, a brick in length. The iron plate is 1 inch thick, with a ledge an inch deep. The stove is built on a strong flag, supported on one side by two brick pillars; the other side is laid over the end of the cold-air drain.

the cold air drain is however dissimilar, yet may very well suit where it passes to and through the *outer* wall.

Having now endeavoured to justify Mr. Meek's integrity of purpose, ability of design, and real success, I leave his memory to honour, and shall close these remarks by showing how they are intended to bear upon the leading subjects of this article.

It is of consequence that a gardener should possess entire command of vapour, of air, and of temperature in every chief plant house—the stove particularly. Perfect equability is also a prime requisite; by which we would express, not a sameness of degree either by day or night—for that would be to subvert the law of nature—but an equal distribution of heat at any one time throughout the atmosphere of any house. There is in Mr. Meek's article a table of "Temperatures in the iron-roofed stove," of the Society's gardens, which exhibits the variations of heat therein three times a day, during an entire week of February, 1846, and proves the wasteful expense of fuel and irregularity of action. Mr. Meek assured me, that during the hard winter of that year, he had purposely avoided any outer coverings of his span-roof, although the house was fully exposed, and every quarry left without puttied laps; nevertheless he had, by ordinary means and the use of very coarse fuel, maintained a temperature of fully 60° by night, varying scarcely two degrees throughout the house.

Now, we want *economy* of fuel, the *combustion* of breeze and such like stuff, a power to *command* 60° to 65° as a minimum, and a *moist* or *dry* atmosphere at will. We do not claim 60° as essential, but we say, be sure of the power to do so, and then suffer the temperature to recede to 50°—55° by night, if you please.

Possessing this requisite power, must not the construction of a house which can confer it be a very great acquisition? We do not argue for, or advocate "Polmaise," and as far as possible, repudiate the term; it has proved a bone of contention: and in Mr. Meek's stove there were no wet blanket, water-jets, or any peculiar appliances whatsoever. An air-flue, conveying (but invisibly) a constant stream of air, driven onward over a heated plate* by the impetus of a descending current of cold air from the body of the house, formed the active principle of the apparatus. Now, there is every reason to believe that the general theory is sound, and the machinery light in expense. We neither urge any one to adopt it at this season, nor to make any alterations of old structures. But should a new pit or something of the kind be required, it might be advisable to adopt the form, after mature reflection and consultation, since it is undeniable that the winter repose of those plants which indicate, by certain appearances, their tendency to lapse into it, can be safely maintained in the cool parts of such a house; while other plants which retain verdure and growth can be supported therein with facility.

A free *circulation* of air is vitality—mouldiness cannot subsist therein, and our proposed apparatus assuredly carries it on *throughout*.

CULTURAL HINTS ON SOME OF THE PLANTS BELONGING TO THE GENUS STATICE.

THE Statice, or Sea-Lavender, is a very beautiful family of plants belonging to the natural order Plumbagineæ, and are low shrubs or herbaceous plants, with showy red, blue, white, or yellow flowers, of a dry texture, inhabiting salt marshes and sub-alpine tracts in the temperate latitudes of both the northern and southern hemispheres. "All the Statices are fine plants worth cultivating," at least so writes the late Mr. Loudon, at p. 539 of the "Hortus Britannicus;" and, without venturing to contradict such an authority, we may state that many species of the genus are plants of very considerable and diversified attractions, and well deserving of extensive cultivation. As may be inferred from the Statices being natives of both the northern and southern hemispheres, some of the species are perfectly hardy, and make admirable plants for rock scenery; but it is among the greenhouse species—those from the southern hemisphere—that we find the most distinct and varied forms, as well as the richest tints in point of colour.

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* Heated "brick-work," it seems, may be substituted.

Beautiful, however, as are some of the more recent introductions, such as *S. arborea*, *macrophylla*, *puberula*, *Dickensonii*, and though last, not least, *imbricata*, one of the latest acquisitions of Mr. Webb, which has lately found its way to this country from the Continent, we have reason to believe that there are still a great number of species to be introduced from the Canary Islands, which are even more attractive than those we already have; and we hope that any persons who have correspondents or friends in that part of the world, will use every endeavour to introduce these gems to our gardens.

When *S. arborea* was first introduced into public notice through the instrumentality of Messrs. Lucombe, Pince, and Co., who sent a magnificent plant, some ten or twelve years back, to one of the Chiswick Horticultural Fêtes, from their nursery at Exeter, we recollect that it was universally admired, and very considerable sums of money were offered for it, without inducing the Messrs. Lucombe to part from their treasure; for as such we have no doubt it was regarded at the time. This was, perhaps, as fine a plant as has ever been seen, even to the present time, being very dwarf and vigorous, and splendidly covered with bloom; and though the Messrs. Lucombe were the first to cultivate the plant successfully, we believe the merit of first propagating it freely belongs to Mr. Cunningham, of Edinburgh.

In the present state of the art of cultivation, one only wonders how such a plant could ever have been regarded as either difficult to propagate or cultivate; as, at the present time, he must be a poor culturist indeed who cannot, in a few months, manufacture a good specimen, of either *S. arborea* or any of the other kinds. The error, however, which too many of us have fallen into in the management of these plants, is that of regarding them as alpine plants, and consequently keeping them much more arid, both atmospherically and at the root, than is either necessary or natural to them. The *Statices*, while they require a free porous soil, and abundance of moisture in the atmosphere, are very susceptible of injury from stagnant moisture, especially at the root, and are sooner injured from that than from any other cause. Indeed, if a pot-plant of any of the kinds once gets water-clogged the only remedy, if you wish it to prosper, is to shake it out of the soil and start it again.

To amateurs the Statices are particularly deserving of cultivation, because of the very long time which the flowers continue in perfection; indeed they may be regarded as everlasting, and we have on several occasions noticed them among the dry flowers sold in Covent Garden Market for winter *bouquets*. Although the flowers continue in perfection for a considerable time, it is not advisable to leave them on the plants after they begin to get shabby; as, if they chance to produce seed, which many of the kinds do very freely, they not only weaken the plants, but the latter, having fulfilled the purposes of nature in producing seed, they cease to form a regular succession of bloom buds, and hence become comparatively unattractive.

To proceed, however, to a detailed notice of some of the principal tender kinds, we will begin with *S. arborea*, the tree Statice, and then notice some of the other kinds.

S. arborea is a native of Teneriffe, and was introduced to our gardens in 1830 through Mr. Webb, but was not brought generally into cultivation for several years afterwards, when the splendid plant alluded to above fixed public attention upon it. It is a greenhouse plant; but, to grow it really well, requires a temperature considerably higher than that of the greenhouse, though a stove heat is somewhat too warm for it. Supposing you have nice dwarf bushy plants in small pots, take them about the end of December, and pot them into a mixture consisting of good turfy loam, cut thin from an old pasture, and in a half-decomposed state, turfy peat, leaf-mould, pieces of charcoal of various sizes, and sand in about equal quantities. Mix these intimately together, taking care not to break the lumps too much, but make the compost firm about the roots of the plants. It is not advisable to shift the plants too largely the first time, and therefore from a five-inch to an eight or nine-inch pot will be quite sufficient. Place the plants in a house or pit at a temperature of from 50° to 60°. Keep the atmosphere moist, fresh, and growing, and sprinkle the plants twice or thrice a day in clear growing weather. If the pots can be set on a gentle bottom-heat, the plants will be benefited by it; but it is not necessary to plunge the pots, or to expose the roots to a very exciting bottom-heat.

With a mild bottom-heat and a moist growing atmospheric temperature, this Statice will grow with great vigour, and produce foliage of considerable size; but if the leaves are not well hardened by a free exposure to air, they do not stand long, but die off rather prematurely, and without any apparent cause. This is the case more especially when grown in a strong stove heat; for though, under such circumstances, you may get foliage of a remarkably vigorous description, it never remains healthy when subjected to a greenhouse temperature.

Upon the foliage of the large-leaved Statices, both upon the upper and lower surfaces, and more especially around the axiles of the leaves and the base of the flower-stems, will be seen a sort of gummy exudation, which, if allowed to accumulate, peels off in flakes, like a thin coating of dry glue. This, if left on the leaves, stops the pores and prevents their performing their proper functions, and hence the necessity of syringing copiously daily, and also of washing the plants carefully with a sponge at least once a fortnight. This washing requires to be more attended to in the growing than at any other season; but it is not advisable to neglect it at any time.

As the plants progress in growth they will, if properly managed, be in a fit state to shift into larger pots about the end of February, using the same compost with a handful of charred bones or cowdung added to it. These are found to be very stimulating manures, and have the advantage of being beneficial to plants without encouraging worms or insects, as is too frequently the case with them when used in a raw state. The bones may be prepared by simply throwing them on a slow fire; but the cowdung requires a more particular preparation. For this purpose a fire of rough wood and garden refuse must be prepared in the same way as for burning charcoal; but instead of covering the heap over with soil, as generally the case, to prevent too rapid combustion, coat the whole over with cow-dung, in a crust of from four to six inches thick; then light the fire and cover the whole of the cow-dung over with garden refuse, and regulate the admission of air to the interior of the heap so as to prevent the fire burning too rapidly. When the fire has burnt out, the cow-dung will be found standing like a crust over it, and may be removed and kept in a dry place for use. It is not necessary to break it into small pieces in using it for pot plants, though of course every particle may be used; but if kept in tolerably large pieces—say about the size of filberts or walnuts—it will be found to act mechanically as well as chemically. This is one of the best manures for pot plants we have ever used; unlike guano and some of the chemical substitutes now so generally recommended, it may be used in quantity without any risk of doing injury; and for all soft-wooded plants and many free-growing hard-wooded ones, it will be found a very suitable and excellent manure. To return, however, to the potting, the plants, if well rooted, may be removed from the nine into twelve-inch pots, taking care to drain them thoroughly, and to use the compost in a free, open state.

After this shift, the plants must be returned to their former quarters, giving them abundance of air after they have recovered the shift, but not increasing the temperature, except by sun-heat. Syringe the plants copiously every day, and persevere with the sponge-washing of the foliage as often as necessary. After this shift, the plants will begin to show bloom; but it is not advisable to allow the flower-stems to remain, unless early flowers are required, until the pots are full of roots, and then they will be strong and vigorous. At this time a little liquid manure may be given to the plants once or twice a week; but care must be taken to use it only in a perfectly clear state, and very weak. Being natives of salt marshes, a little salt may be added to the manure-water with advantage; but it will be necessary to administer it with considerable caution, and not too frequently.

When the plants begin to expand their flowers, they may be removed to the greenhouse, and here they will continue to bloom for a considerable period. It is not, however, advisable to expose the plants to strong sunlight, as the leaves are very tender, and consequently it will be necessary to shade them during the summer months.

Statice arborea may be propagated by cuttings of the side branches, not taken off in the usual manner, but prepared for rooting previously to removing them from the parent plant. This preparation is made by cutting an incision sloping upwards about half way through the stem, in which, to keep it open, a small peg or wedge must be inserted. This, in about a fortnight, will have cicatrised over, preparatory to the production of roots; and then, if a little damp moss is tied on, the roots will strike into it almost immediately, and will be fit for removal into single pots, in about a fortnight or three weeks.

Statice macrophylla—the large-leaved Statice, was introduced from the Canaries in

1816, but was afterwards lost, and was re-introduced some seven years back through a gentleman in the neighbourhood of Hull. It is a plant of very considerable beauty, producing blue and white flowers, and when well grown is a very remarkable and rich-looking plant. We have had plants which produced leaves two feet long and proportionately broad, and flower-stems four feet high; and when in bloom they were very remarkable objects. These were grown in stove-heat, and very rapidly; but, as has been remarked previously, the leaves soon became shabby when kept in a lower temperature.

This plant requires the same treatment as to temperature as *S. arborea*, and the same soil and potting. A nice healthy plant at this season will make an exhibition specimen by July, and will continue to bloom until the autumn. It is not advisable to permit the plants to produce flowers until they are thoroughly established in twelve or thirteen-inch pots, and then they will produce a splendid head of bloom. After the flowers get shabby, the stem must be removed, and through the winter the plants should be kept in the temperature of the intermediate house.

This species is propagated, but not very freely, by the side branches, treating them in the same manner as *S. arborea*. It also produces suckers occasionally from the lower part of the stem; and some of the strong roots, if they are severed from the parent plant and turned up in the way of a cutting, will generally produce a shoot, and may then be removed from the pot, of course protecting them until they are thoroughly established.

(To be continued.)

OBSERVATIONS ON THE CULTURE &c. OF THE GENUS ISOPOGON.

THIS genus belongs to the diversified order of Proteads (*Proteaceæ*). All the species are handsome evergreen shrubs, with a stiff neat habit of growth, all natives of Australasia. About twenty kinds have been introduced; all are very desirable in unique collections of plants.

The following descriptions and selection of those most ornamental will be of service, especially where only a few can be allowed to be cultivated.

I. anemonefolius.—This was the first species brought to this country, being introduced so long since as 1791. It is a pretty plant of dwarf growth, and produces its yellow flowers freely during the summer months, during which time it may be placed out of doors, but it requires the shelter of a greenhouse in winter.—A native of New Holland.

I. anethifolius was introduced in 1796, and is found, generally, in old collections of plants; its flowers are pale rose-colour, rather showy; the plant grows to about five or six feet high.—A native of New Holland.

I. attenuatus.—This species was introduced in 1822; its flowers are pale rose-colour, and are produced abundantly in spring.—A native of New Holland.

I. axillaris.—The flowers of this species are a pinkish-white and produced in axillary heads, an exception to the genus; the plant is of free growth, and was introduced, from New Holland, in 1822.

I. Baxteri.—A handsome species. Seeds of it were sent from New Holland to the Botanic Garden, Edinburgh, 1830, by Col. Lindesay. The cone of bloom is of a rich rose-colour, and covered with downy white hairs.

I. corniger.—A recent introduction from Swan River, said to be a very pretty species, but has at present found its way into few collections.

I. ceratophyllus.—From New Holland, introduced in 1824. Its flowers are produced in terminal heads, in the spring months, and are nearly colourless.

I. divaricatus.—Flowers pale yellow; bush low and spreading.—New South Wales. Introduced about 1800.

I. formosus.—Perhaps the most beautiful of the genus; it was introduced to Kew in 1805. It remained, however, until a few years ago, almost unknown in British collections; until Mr. Baxter found it growing in the neighbourhood of Lucky Bay, in New Holland, and sent seeds of it to Mr. Mackay. The leaves are very much divided, and the heads of flowers purple.

I. longifolius.—Flowers yellow, collected in a globose head.—Native of the southern parts of New Holland. It was introduced in 1820.

I. Loudoni.—This is both rare and handsome; possibly its flowers are more handsome than those of any other species. It was discovered by Mr. Baxter, in 1829, in King George's Sound. Flower-head rich purple.

I. polycephalus.—The flowers of this species are white, and, as its name indicates, are collected in many heads; it flowers in the spring months, and is a very pretty kind. It was introduced, from New Holland, in 1824.

I. propinquus.—Flowers are pinkish-white, and are produced in spring. Seeds of it were sent from New Holland in 1823.

I. roseus is very handsome; it was raised by Robt. Mangles, Esq., of Sunning Hill, from seeds imported from Swan River by Capt. James Mangles, in 1840. The leaves are three-lobed, and the flower-cones red purple. It is nearly allied to *anemonefolius.*

I. scabra.—Of the whole twenty-three or four species of *Isopogon* which have been discovered, *scabra* must be ranked as one of the handsomest. The heads or cones of bloom are large, purple, or deep rose. It was introduced in 1841, by Mr. James Drummond, from the Swan River. See *Mag. Bot.*, vol. x., p. 213.

I. spathulatus.—Discovered by Mr. Baxter in King George's Sound. The flowers are rose-coloured, crowded together at the extremities of the branchlets, and are less conspicuous than some of the other species. It was introduced in 1836. A variety also, which has been named *linearis*, but of more slender growth than the species, has been discovered, and sent to this country by Mr. Baxter.

I. sphærocephalus.—This is a free grower, forming a bush three or four feet high. The flowers are bright yellow, collected in several crowded spherical heads, and make a very good appearance. Seeds were collected at Swan River by Mr. James Drummond, who sent them to the Royal Gardens of Kew.—*Bot. Mag.*, 4332.

I. teretifolius.—Flowers dull white, and produced in April. The plant was introduced from New Holland in 1824.

I. trilobus.—Flowers pinkish-white, produced in spring, and the plant introduced in 1803.

The most beautiful of the above are *Baxteri*, *corniger*, *formosus*, *Loudoni*, *roseus*, *scabra*, and *sphærocephalus*.

The culture of all the species is alike, and although they were formerly considered difficult to keep, now, since their habits have become better understood, they are found to require very little more trouble than the most common greenhouse plants.

The soil in which they are potted should be composed of equal parts light sandy loam, heath-mould and sharp sand well mixed, but not too finely broken; and it is always best if gathered not too long before being used, for the plants never seem to enjoy themselves so well in a soil which has been long thrown together in a heap.

Like all proteaceous plants, these require in potting, a large portion of drainage. Lay a considerable quantity of broken potsherds at the bottom of each pot, and likewise a few pieces of wood charcoal; also mix a portion of each through the soil.

Although they are not so tenacious of being cramped at the roots as *Proteas* or *Hakeas*, yet it is very advisable to give them plenty of pot-room, especially if the plants are ever placed out of doors during summer, which, however, is not to be recommended.

Proteads are remarkable for the tenderness of their roots, and these plants are not exceptions; it is therefore best never to allow the soil in the pots to become very dry; but if water be regularly supplied with caution, so that both the extremes of either drought or over-moisture be avoided, their roots will make rapid progress.

In the summer season the plants may be placed in any part of the greenhouse where they can receive plenty of light and air, but they will never live if crowded amongst Pelargoniums or other heavy-growing plants, where from the close confinement they are unable to breathe freely. In winter, when the temperature is low and full of moisture, this caution is especially necessary; indeed, at that time, the nearer they are placed to the glass the better, provided there is no danger of the frost reaching them.

Propagation is effected by cuttings and seeds. Cuttings of the ripened wood are taken off at a joint, planted thinly in pots of fine sand, and placed under a hand-glass, but not in heat, as that would destroy them at once. Remove the glass occasionally to allow them to dry, as they are very liable to damp off. Water with care, but never over the leaves, and let them remain exposed for awhile to get a little dry before the glass is again replaced over them.

When struck, pot off in small pots, and place them under a hand-glass until they have recovered the removal, when they may be exposed to the air of the greenhouse and treated like the parent plants.

REMARKS ON THE TREATMENT OF BIGNONIA VENUSTA.

Nearly seven years have elapsed since we figured this gorgeous stove climber in our "Mag. Bot." (vol. vii., t. 123), and there, in treating of its culture, we recommended that it should be well pruned during the period of rest. It is to be regretted that, notwithstanding the high character we then gave of it, this deserving plant is still very little grown in our stoves, and where it is found, the display of its flowers is generally speaking very imperfect. We are therefore induced to give a further notice on the subject, in the hopes of stimulating those who have not hitherto possessed this splendid plant, to immediately obtain it, and by pointing out to those who have it already and have flowered it very imperfectly, a few traits in its culture, by following which they will be able to render it an object of admiration.

The temperature requisite is a moist stove, where, during the growing season especially, a considerable amount of both heat and moisture can be supplied.

The soil most suitable is a mixture of turfy loam, two parts; sandy peat, half a part; and leaf mould, half a part: the latter must be well rotted, and the two former should be of a very fibrous quality, and be only roughly broken.

If the plants are to be grown in pots, large ones should be selected for the permanent flowering ones; for if the roots be at all cramped, the produce of flowers will not give satisfaction to the cultivator. Young plants will progress very rapidly in growth if they are placed in a brisk heat and shifted pretty often, to prevent the roots becoming matted; but to have this gem in the highest perfection, plant it out in a prepared border in the stove, in a situation where its roots will derive some warmth from the heating apparatus; then it will riot in luxuriance, and produce immense festoons of gorgeous flowers, the grandeur of which must be seen to be properly appreciated. Its season of flowering, too, being throughout the winter months, is another quality which renders it doubly valuable.

Water may be liberally supplied from May to the end of August, that is, during the season of growth, both over the foliage and at the roots; but this must be considerably diminished as autumn progresses, that the new wood may have an opportunity of ripening, and the syringing must be altogether dispensed with. When the plants are brought into a state of rest, very little is required even at the roots, although they will not at any time endure drought without injury. A little very thin liquid manure, administered once or twice a week during the time the plant is in full growth, is an excellent assistant to the development of its parts.

When the growing season is quite over, that for flowering commences; this is generally about the middle of October, and usually continues until the middle of February.

As soon as the flowering season terminates, prepare the plants for wintering. If in pots, they may be placed at the cool end of the stove; but if planted out, this of course cannot be done. Now cut down the plant to about five or six feet in length, and prune off all the side shoots so as to have only one stem. This must be repeated every year, for on this in a great measure rests the success of its flowering freely. It must now be allowed to repose, only watering at the roots when the soil shows signs of dryness, and preventing the action of any other excitement until about the middle of April, when it will again show signs of growth. Then top dress, or pot if required. And when the young shoots have extended to three or four inches in length, thin them out to not more than six for training, and plant the rest as cuttings, in pots of sand, placed under a hand-glass in heat.

FLORICULTURAL NOTICES.

NEW, RARE, OR INTERESTING PLANTS IN FLOWER AT THE PRINCIPAL SUBURBAN NURSERIES AND GARDENS.

Aconitum autumnale. In the gardens of the Horticultural Society, Chiswick, this species is now blooming freely; it has pale-blue flowers, and will make a handsome addition to our flower-garden. Mr. Fortune introduced it from China.

Æschynanthus miniatus. Messrs. Veitch and Sons, Exeter, forwarded a specimen of the above to us, having large clusters of flowers, each flower an inch-and-a-half long, of a deep crimson colour, with dark-brown bars in the throat, and partially down the petals. It is a small-growing species, with rich, glossy green foliage, and evidently a profuse bloomer.

Barkeria Skinneri major. In the nursery of Messrs. Loddiges, Hackney, we found a splendid variety of *B. Skinneri*, called by them the *var. major*. The flower-scape nearly two feet long, holding upwards of thirty flowers expanded, of a deep, reddish, lilac-purple, with stripes of bright gold colour down the lip. In habit it is much stronger, foliage longer, and double the breadth, apparently less delicate than the old variety, and in every way superior and more valuable.

Clerodendron macrophyllum. Messrs. Veitch and Sons exhibited at the Horticultural Society's Rooms, Regent Street, a handsome specimen of this free-blooming species. The plant was about three feet high, and completely covered with a dense mass of small white flowers from the base to the top of the plant. The foliage is large, upwards of ten inches long by four broad, of a dark-green colour. Viewed as a plant producing an immense mass of flowers in so small a space, this species is unequalled.

Eria spe. nov. An unknown species, introduced from Borneo by Mr. Low, of Clapton, in whose collection it has flowered. The species was found on the banks of a river, growing on trees in large masses, with flower-scapes eight or ten inches long, closely packed on the stem, and of a pure white. No idea can be formed of the beauty of the plant from the specimen in flower, but when in health, and flowering as freely as in its native country, we think it will be an excellent addition to our stoves.

Franciscea gracilis. In the exotic nursery of Messrs. Knight and Perry, Chelsea, is flowering a very pretty shrub, of neat habit and rich green foliage. The flower has a narrow tube about four inches long, spreading at the extremity to about an inch-and-a-half in diameter, a pale cream-colour, and slightly fragrant. The flowers have an interest differing from most of the species by lasting upwards of a week in good condition, are produced freely, and make a neat and pretty appearance in the hothouse.

GESNERIA MACRANTHA PURPUREA. A dwarf plant, with flowers, stem, and leaves clothed with woolly hairs. The species flowers at about six inches high, producing four most intensely bright scarlet blooms, about three inches long; for those to whom size is an object, this species will be a most useful one, as it rarely grows larger than here represented. It was in flower in the nursery of Messrs. Knight and Perry, Chelsea.

IXORA SPE. NOV. Messrs. Rollisson's, Tooting, have a species of Ixora in flower imported by them from Java. The inflorescence much like those of *I. coccinea;* perhaps the individual flower may be a little larger, and brighter in colour. The habit and general appearance is that of *I. coccinea.*

JUSTICIA CARTHAGINENSIS—an old though scarce species in our gardens—has been flowering abundantly in the stove of Mr. Glendinning, Chiswick Nursery. The colour is a deep, rich lilac, the centre of the lower petals being striped with white. It is a profuse bloomer, has an excellent habit, enriched with foliage of a deep, bright, bluish-green.

LOBELIA FULGENS, *var.* We were delighted, a short time ago, to find in the flower-garden of the late Mr. Wells, Redleaf, Kent, several most beautiful varieties, both in size, form, and colour. One of the varieties, called *L. fulgens multiflora*, has most brilliant scarlet flowers, the three lower petals an inch-and-a-half long, spreading out to about the same length from point to point. The flower-stem rises four feet, sending out laterals close to the ground; foliage a deep green, slightly tinged with reddish-purple at the back of the leaves, stem, and peduncles. A second variety, *L. fulgens pyramidalis*, differs slightly from the above in colour, being of a lighter and brighter scarlet, the lower petals longer, narrower, and more pointed: the habit same in every respect. A third variety, called *L. Marryatti*, is less robust, not rising more than from two to three feet high. The flower is deep crimson-purple; some of them become mottled with a pale rose-colour, and have a singular appearance. The foliage is neat, and a bright green. They are all most useful varieties for cultivation.

NYMPHÆA SPE. NOV.—a most interesting and handsome aquatic—has been flowering for some time past in the stove of Messrs. Knight and Perry, Chelsea. The species has flowers of the purest white, and the centre is enriched with a mass of golden-coloured stamens; when in fine perfection, measures more than six inches in diameter. The bud is a beautiful bluish-green, and expands generally about eight in the evening, and closes at eight in the morning, and is highly fragrant. The foliage is handsome, of a deep green, and beautifully reticulated.

PHALÆNOPSIS AMABILIS. Mr. Schroeder, of Stratford Green, has lately had a most superb variety of this charming orchid in flower, having blooms nearly twice the size of any specimen hitherto seen by us. The petals were so fleshy and opaque that the white was pure and dazzling; this, with a golden mark or two in the centre of the flower, and the entire absence of pink or any other colour, renders it the most charming specimen we have seen. The variety is the one with long, narrow leaves, and the whole exhibited great merit in the cultivation.

SOLANUM PSEUDO CAPSICUM. This old plant we noticed in the nursery of Messrs. Knight and Perry, Chelsea, and think a very desirable one for ornamental purposes at this season, not for its flower, which is small, white, and insignificant, but for its beautiful orange-coloured fruit, about the size of a fine cherry, which are produced in abundance. The richness of the fruit is increased by the neat foliage of the plant. The species is one that deserves some attention from cultivators, as it makes a gay appearance in the greenhouse at a time when both flowers and fruit are scarce.

OPERATIONS FOR DECEMBER.

December being a dark and wet, or frosty and snowy month, the management of all plant-houses must be regulated accordingly. Thorough cleanliness at this time of the year especially is indispensable, and, if anything, more particularly in cold pits and frames, where fire is not used. Light, too, is greatly diminished; therefore, so arrange the plants as to obstruct as little of it as possible. If plants are crowded close together, whether they are inhabitants of the greenhouse or stove, no judicious potting or care, however great, can retain them in health and vigour, if the air and light cannot penetrate freely through and around them. When crowded they are seen to make efforts to reach the light, and thus become what practical men call drawn; and not unfrequently the leaves and more tender branches rot, and the plants thus become disfigured.

Stove plants, for the most part, have now perfected their growth; although in a promiscuous collection some are now just commencing to grow, and others are coming into flower; but such as are in a proper condition should be brought into a state of rest. This is done by introducing them into a cooler and more genial atmosphere, where they will receive no excitement. *Orchids* which have perfected their growth, are also brought into repose by the same means—a lower and somewhat dry temperature, by withholding water from the roots, by entirely dispensing with syringing, by diminishing the amount of atmospheric moisture, and by admitting a larger amount of air than usual, thus lowering the temperature. All shade, too, may be removed, and any plants hanging in baskets near the glass, should be hung a little lower, that they may not be subjected to the vicissitudes of the weather outside. All the species which are still in a state of growth, must have every facility afforded them for perfecting their various developments.

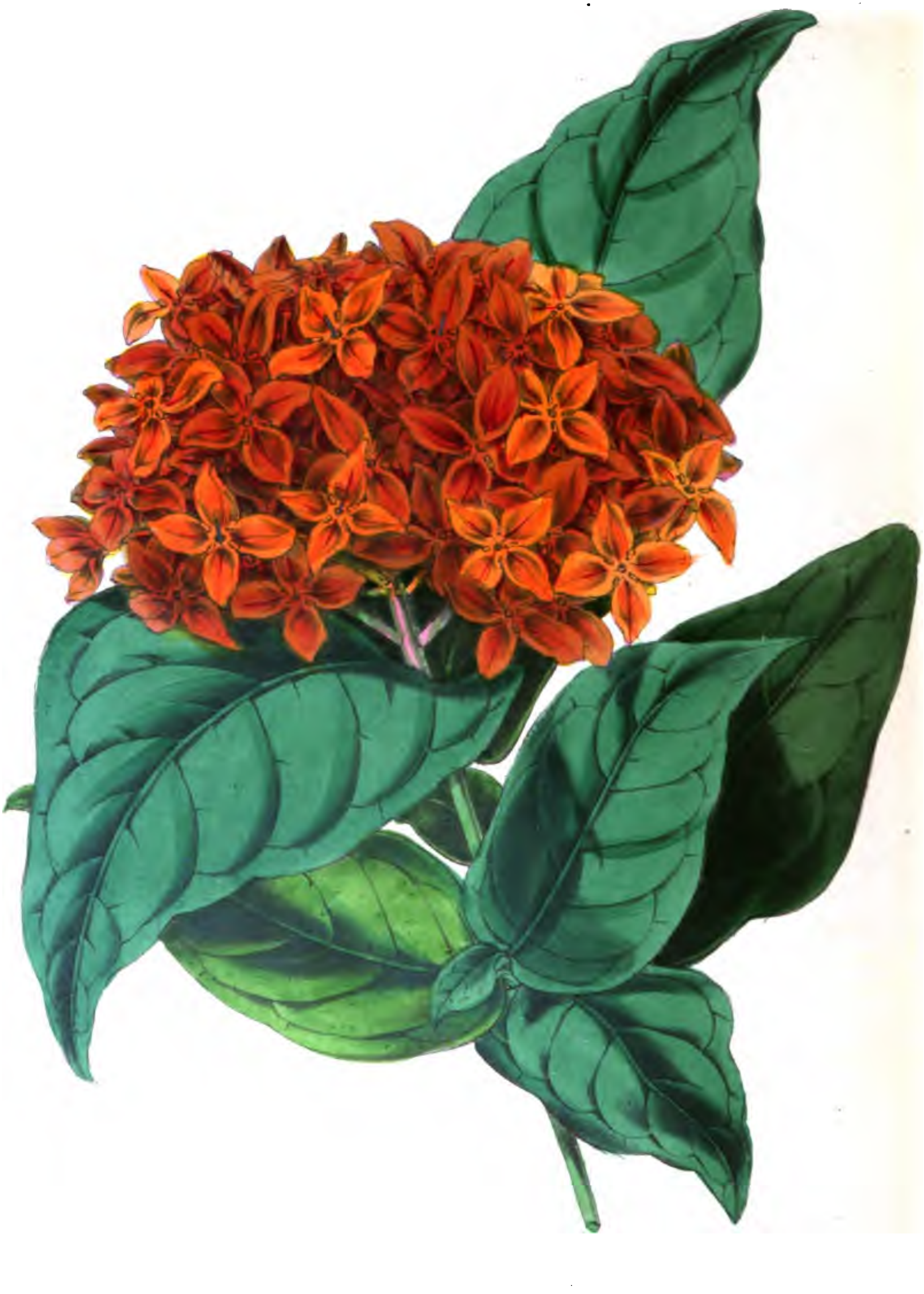
The greenhouse and conservatory are now both very gay, and where there is a sufficiency of Camellias, this display can be prolonged throughout the whole of the dreary months of winter. *Corræas*, *Epacrises*, *Polygalas*, *Pimeleas*, *Acacias*, and many other plants, will now be coming successively into bloom; administer water with care, and do not wet the leaves of any plants more than necessary at this season. Keep also a mild and genial atmosphere, about 50 degrees by day, with plenty of air, and descending to about 40 degrees by night. Bulbous and tuberous-rooted plants, as *Amaryllis*, *Oxalis*, *Lachenalia*, &c., now awaking from their repose, should receive a moderate supply of water, and be repotted and prepared for growth and flowering.

The stock of plants in pits and frames for bedding out in spring, must come in for their share of attention. They should be kept perfectly clean and free from dead leaves, and be so arranged that light and air can pass freely amongst them, and keep them as hardy and airy as possible; if the pots were plunged to the rim in saw-dust or coal-ashes, the necessity of often watering would be obviated; but this is by no means indispensable, provided they have a nice dry surface of coal-ashes on which to stand. In severe nights cover securely with mats or litter, to protect the plants from injury.

Pits used for forcing flowers, if not heated by hot-water apparatus, should now be filled with fallen oak leaves, and if a portion of well-worked manure be mixed through, the leaves will be brought into immediate action. Over this bed of leaves lay a few inches of sifted rotten tan. Bulbs for forcing should be successively introduced in small quantities, and be plunged over head in the tan; no water will then be required to be given until after they are above the surface. Bring in also Azaleas, Rhododendrons, Lilacs, Roses, and Sweet Briars.

In the sheds, look over the Dahlias which were taken up and dried; stow them away and see that they are properly labelled.

In the open air, remove any decayed or decaying vegetation, as leaves, stems of perennial plants, &c., and throw them on the rubbish-heap to form vegetable mould. All ground unoccupied dig or fork up roughly, that it may be fully exposed to the action of the weather. Never rake ground or render it smooth in winter, for it is sure to unite and become sodden. Insects are also destroyed by rough digging; for although they are not often injured by frosts, yet their eggs, &c., are brought to the surface and exposed to insect-eating birds, which in winter search narrowly into every nook and crevice.



S. Holden del & lith

Ixora Javanica.

IXÒRA JAVÁNICA.

(Java Ixora.)

Class.
TETRANDRIA.

Order.
MONOGYNIA.

Natural Order.
CINCHONÀCEÆ.

Generic Character.—*Calyx* with an ovate tube; limb small, four-toothed. *Corolla* monopetalous, salver-shaped, with a slender tube, and a four-parted spreading limb. *Stamens* four, slightly exserted. *Style* equal in lenth to the tube of the corolla, or sometimes a little longer, two-parted at the point; lobes of the stigma spreading or revolute. *Ovary* inferior, two-celled. *Fruit* a drupaceous berry, crowned with the permanent calyx, two-celled, each cell containing one or two seeds.

Specific Character.—*Plant* an evergeen spreading shrub, growing from three to four feet high. *Leaves* opposite, on short petioles, ovate-oblong, acuminate, smooth. *Stipules* broad at the base, acute, sometimes awned. *Flowers* of a rich orange-vermilion, in terminal corymbs; corymbs on long peduncles, trichotomous, divaricate. *Calyx* with the four segments of the limb obtuse. *Corolla* with the four segments of the limb oval and rounded. *Stamens* alternate with the segments of the corolla.

Synonyme.—Pavetta Javanica *Blume.*

This very beautiful species bears some resemblance to *Ixora crocata*, but is much superior to it both in flower and habit. It is a native of Java, as its specific name indicates, where it grows in the woods on the mountain sides, and forms a broad-spreading bush truly beautiful to behold.

It has been lately introduced by Messrs. Veitch and Son, of Exeter, through their collector. A fine specimen was shown by the above gentlemen at Chiswick, in July last, when our drawing was permitted to be made, and from which we judge that it is a very free growing kind; and being a first-class plant, it must be regarded as a valuable acquisition to our stoves.

Nothing peculiar is required in the successful treatment of this fine plant; precisely the same system should be pursued as recommended for *I. Bandhuca*, Mag. Bot., Vol. ii., t. 265; Vol. iii., t. 75; and pages 40 and 179 of the present volume, where a system of growing them to great perfection is given in detail.

Iswara is the name of a Malabar idol, to which were offered the flowers of some of the species.

PHLÓX LEOPÓLDIANA.

(King Leopold Lychnidea.)

Class.
PENTANDRIA.

Order.
MONOGYNIA.

Natural Order.
POLEMONIÀCEÆ.

GENERIC CHARACTER.—*Calyx* tubular, deeply five-cleft, connivent. *Corolla* salver-shaped; tube elongated, limb twisted in æstivation, with cuneated segments. *Stamens* inserted above the middle of the tube. *Stigma* trifid. *Capsule* three-celled, cells one-seeded.

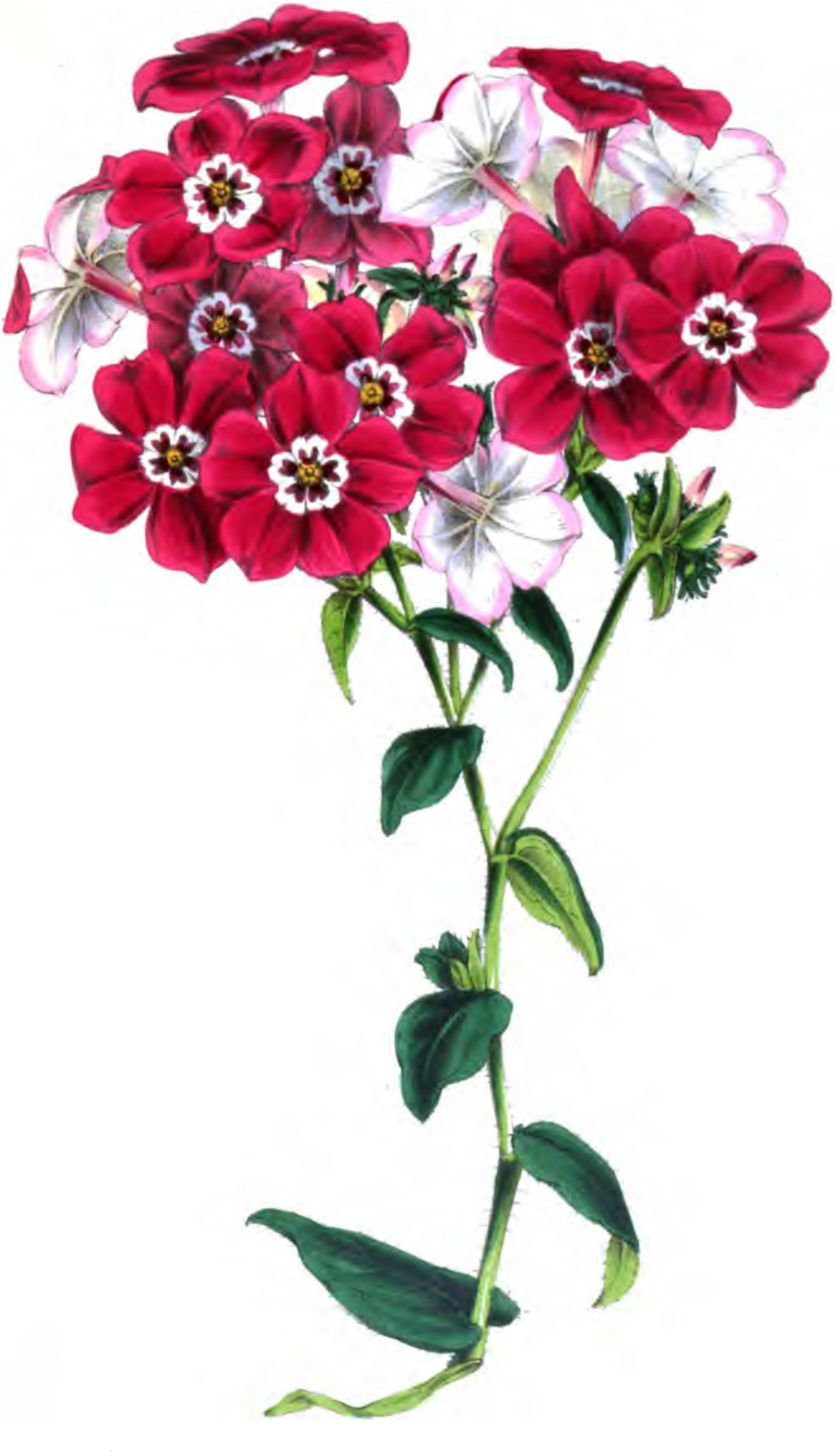
LEOPOLDIANA. — A hybrid; root perennial; stem growing a foot or eighteen inches high, with a habit like *P. Drummondii;* the flowers are produced in terminal corymbs; tube of the *corolla* long and slender, limb five-cleft, spreading, of a deep rosy carmine, eye very dark crimson, and throat white.

THIS most beautiful Phlox was raised a short time ago in Belgium; it is a hybrid of *P. Drummondii* (which was figured in our Magazine, Vol. ii., t. 221), and in habit greatly resembles that species. No kind can be better suited for bedding out, or training against a low wall or trellis, as its stems are slender and spreading; the flowers are large, and produced in great profusion; their colours are more brilliant and striking than those of any other known kind; and where the soil is suitable, it is a plant of very rapid growth. It will grow in any common garden soil, but that most suitable, is a very light rich sandy loam.

It can scarcely be considered hardy; but like *P. Drummondii* requires a little protection from frost and wet. Young plants are easily raised from cuttings planted in pots of soil or sand, at the same time, and after the same manner as those of Verbena; they are preserved through the winter in a cold pit or frame, and planted out when the spring frosts are over, at the usual time of furnishing the flower-garden with Pelargoniums, Heliotropes, and Verbenas. It may also be increased by seeds, but these cannot be depended upon, as the offspring produced this way seldom equal the parent plant.

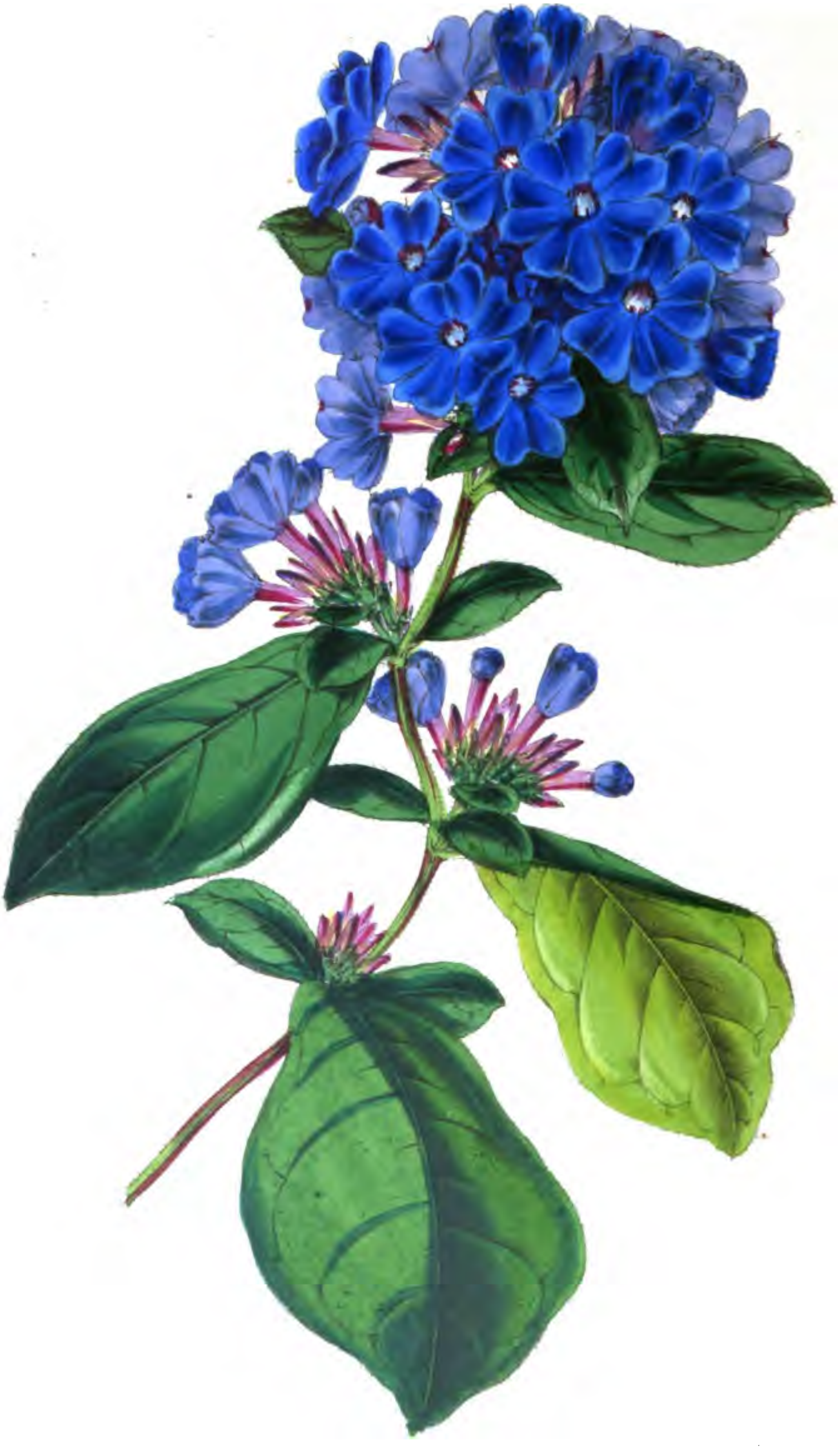
For the opportunity of figuring this handsome plant we are indebted to Messrs. Henderson, Pineapple-Place, London, in whose nursery it flowered abundantly in September last, when our drawing was made.

The name is derived from *Phlox*, flame, in allusion to the bright colour of the flowers.



S.Holden, del & Lith.

Phlox Leopoldiana



S. Holden del. & Lith

PLUMBÀGO LARPÉNTÆ.

(Lady Larpent's Lead-Wort.)

Class. **PENTANDRIA.**

Order. **MONOGYNIA.**

Natural Order.

PLUMBAGINÀCEÆ.

GENERIC CHARACTER.—*Calyx* tubulose, plaited, five-toothed, persistent. *Corolla* monopetalous, salver-shaped, limb five-parted. *Stamens* hypogynous. *Styles* filiform. *Stigmas* acute. *Ovary* superior, one-celled, one-seeded.

SPECIFIC CHARACTER.—*Stems* slender, zigzag, covered with scales and close-pressed hairs. *Leaves* obovate, acute, tapering to the base, covered with minute scales on each side, finely serrated, and fringed. *Flowers* violet, in close terminal heads. *Bracts* and *sepals* smooth, shining, ciliated, perfectly destitute of glands.

FOR the opportunity of figuring this valuable addition to our autumn border flowers, we are indebted to Messrs. Knight and Perry, in whose nursery at Chelsea it flowered in such immense profusion in October last, that, on a fair computation, no less a number than 4000 blossoms were perfected.

It is a native of China, and was discovered by Mr. Fortune, growing on the ruined ramparts of Shanghai; it was subsequently found by Mr. Smith, in the same locality, and also growing out of the stone-work of the city wall; but is stated to be, even in its native country, a very rare plant.

For its addition to our collections, we are indebted to the latter gentleman, who sent seeds to Sir George Larpent, by whom it was raised, and a flowering specimen was shown at a meeting of the Horticultural Society in July last, when a prize was awarded to Mr. Eyles, Sir George's gardener.

The flowers, as will be seen by the figure, are of a deep rich violet, beautifully tinted in the throat with fine red. The plant also is sufficiently hardy to endure the open air in summer and autumn, so that its real value is greatly enhanced by the use to which it can be appropriated.

For the successful cultivation of this plant, its native localities would point out the following several particulars.

Select a soil naturally of a light and sandy texture, or render it so by making a mixture of peat, light loam, and sand.

The pots in which the plants are placed to grow should be filled with at least one fourth of broken crocks as drainage, and a few should also be mixed through the soil.

A cool dry pit will probably be found better than any other situation for preserving them through the winter. Set the pots on a layer of sifted coal-ashes or other dry surface, and allow them to be exposed to as much air as the weather will permit.

Water must be supplied very sparingly through the winter, and by no means must the leaves be wetted. In spring, when the growth begins, they may have a fair quantum afforded if the drainage is good.

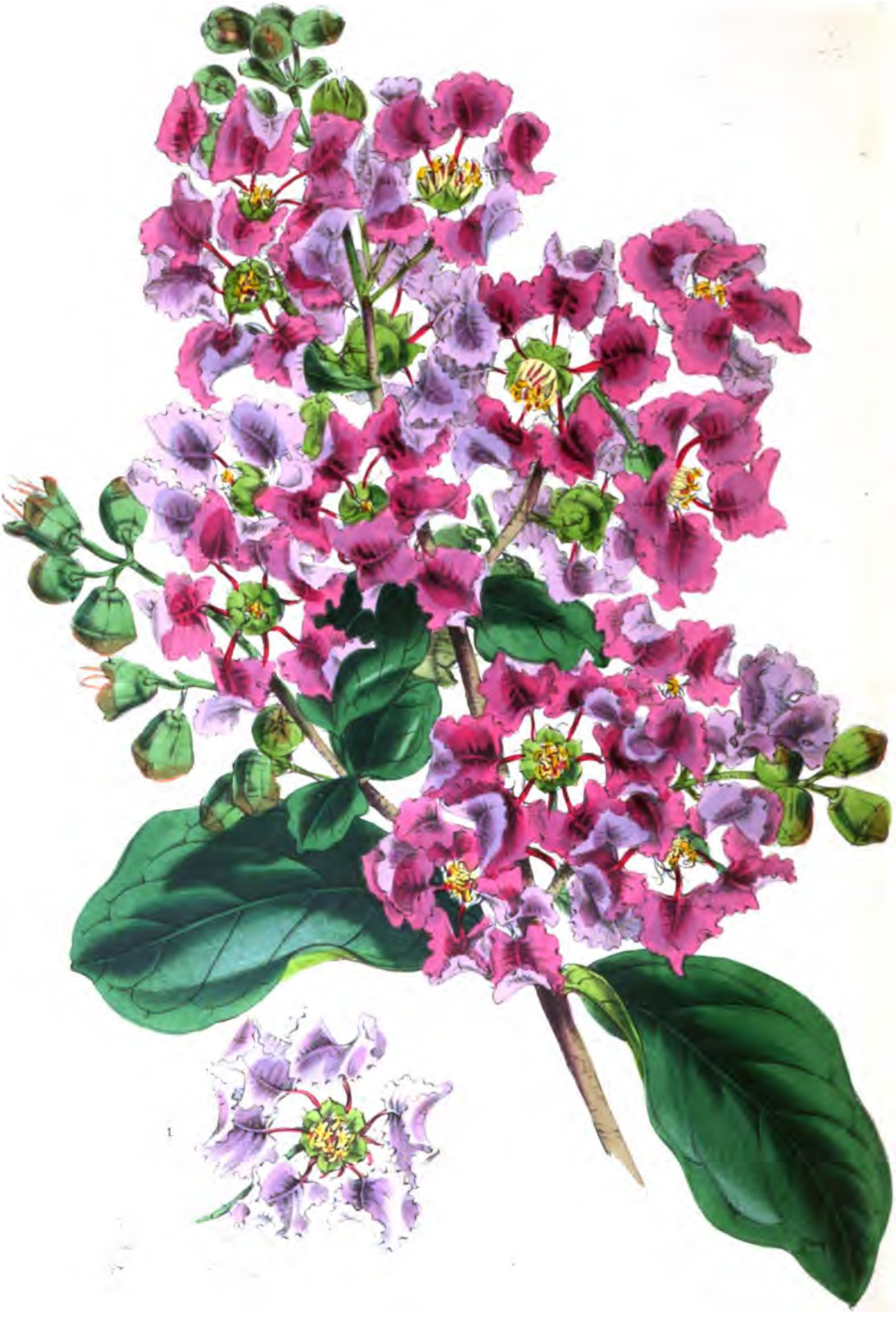
As the spring frosts begin to subside, expose the plants to the open air every fine day; this will harden the wood and prepare them for their summer quarters in the flower-garden.

When the parterre may with safety be furnished with Verbenas, Heliotropes, and Pelargoniums, this plant may occupy one or more of the beds, than which perhaps none will be found more suitable or produce a more pleasing effect.

Propagation is effected by cuttings, which are planted in sand, and treated like those of Verbena and other similar plants.

The generic name is derived from *plumbum*, a disorder in the eyes, which some species were formerly supposed to cure; and the specific name was given by Dr. Lindley, in compliment to Lady Larpent, at the request of Messrs. Knight and Perry.

The annexed vignette is a very good representation of the habit of this very desirable plant.



Lagerstræmia elegans

LAGERSTRŒ̀MIA ÉLEGANS.

(Elegant Lagerstrœmia.)

Class.
ICOSANDRIA.

Order.
MONOGYNIA.

Natural Order.
LYTHRÀCEÆ.

GENERIC CHARACTER.—*Calyx* bibracteolate at the base, six-cleft, campanulate; lobes valvate in æstivation. *Corolla* consisting of six petals, alternating with the lobes of the calyx, and inserted between the divisions at the top of the calycine tube. *Stamens* many, of which the six outer ones are the largest, inserted lower in the tube of the calyx than the petals. *Ovary* three to six-celled. *Style* one. *Fruit* a *capsule*, three to six-valved, girded by the calyx, three to six-celled. *Seeds* winged.

SPECIFIC CHARACTER. — *Plant* a deciduous shrub, growing eight or ten feet high. *Branches* numerous, tetragonal, angles winged. *Leaves* opposite, entire, roundish-ovate, acute, glabrous, of a glaucous green. *Peduncles* axillary, but constituting terminal many-flowered panicles. *Flowers* deep rich rose-colour, varied with yellow. Segments of *calyx* neither furrowed nor plaited. *Petals* curled, on long claws.

THE subject of our present plate resembles in some respects the *L. indica* (1), but its growth is far more robust, its flowering season much later, and its whole habit, when the two are seen together, very distinct. The blossoms, which are rather darker coloured, and a little smaller than those of *L. indica*, are produced in fine spreading panicles at the extremities of the branches, are exceedingly showy, and continue in perfection for a long time.

It is a native of mountains in the East Indies, where it was originally discovered by Dr. Wallich, and by him introduced to the Botanical Garden of Calcutta, from whence it reached this country in 1841.

The cultivation of this magnificent shrub, in connexion with the other known members of this fine genus, is given in detail at page 209 of the present volume of our Magazine, to which our readers will be so kind as to refer. It might, however, be here mentioned, in addition, that too much cannot be said in favour of the most extensive cultivation of every known species of this genus.

The name was given by Linnæus in honour of Magnus Lagerstrœm, of Gottenburg, Director of the Swedish East India Company, and who was a great patron of Botany and Natural History.

The greater part of Lythraceous plants are herbaceous; some form shrubs, and a very small proportion grow into timber trees. The order is divided into two sections, *Lythreæ* and *Lagerstrœmeæ*. Of the first, many species are used for medicinal purposes, and in their native countries are highly esteemed. Others are put to various domestic uses. The flowers of *Lythrum Hunteri*, and *Grislea tomentosa*, which are of a beautiful red, when mixed with those of *Morinda*, form a fine dye. *Lawsonia inermis*, of Linnæus, or *alba* of some authors, is generally supposed to be the cypress or gopher wood of the ancients; the leaves, also, when pounded and made into a paste, constitute the dye called Henna, with which the Egyptian women stain their nails and feet. Of the second division, *Lagerstrœmeæ*, may be mentioned *Physocalymna floribunda*, the flowers of which, according to Don, resemble those of *Lagerstrœmia:* the wood is rose-coloured, and much esteemed by cabinet-makers.

In Germany it is called *Rosenholz;* in the province of Goyaz, in Brazil, *Cego machado;* in the province of Rio Janeiro, *Pao de rosa.* It is, however, not the Rosewood of English cabinet-makers, as Don imagined. See *Dr. Lindley's Vegetable Kingdom*, 2nd edition, under Leguminous Plants.

METHOD OF TREATING DYSOPHYLLA PUMILA, STELLATA, AND VERTICILLATA,

SO AS TO MAKE THEM PRETTY OBJECTS DURING SUMMER.

◆

These three species of plants, although long introduced into our gardens, are yet very scarce, and have been little esteemed as plants of ornament. They are all perennials, and perhaps in their native countries re-germinate vigorously for many years; but with us it is far the best to treat them as stove annuals, for with the best management they never seem to thrive again after they have freely flowered and borne seeds, which, if properly treated, they produce liberally.

They are all natives of the tropics, growing in ditches or shallow rivers; they may therefore be considered as stove aquatics. They attain from nine to eighteen inches in height; their leaves grow in whorls, and in habit are not much unlike some species of *Galium*. The flowers are produced in close but slender spikes from two to three inches long, at the extremity of each stem; individually, they are small and insignificant, but from their disposition, the plants, when in bloom, are rendered exceedingly pretty.

Increase is effected both by seeds and cuttings; the former are sown early in February at the same time as those of tender annuals. The soil should be composed of two parts sandy peat and one part light loam; break it pretty fine, but do not remove the fibres; with this fill the pots in which the seeds are to be sown; make the surface as smooth and fine as possible, then water it well, and when this has drained through, sow the seeds thinly upon the plain surface, and gently press them down with the back of the hand; some persons advise scattering a thin layer of fine sand over the seeds, but this is not necessary; place each pot in a pan of water, and set them in a hotbed or other situation where a lively heat is kept up; cover them with a hand or bell-glass, and, in the course of a month or so, they will appear above the surface.

When thoroughly up, remove the hand-glass to prevent their being too much drawn, and as the plants advance in growth, water may be administered over-head with a very fine rose. When they are large enough to transplant, put a single plant in each 60-sized pot filled with the same soil in which the seeds were sown; place each pot in a pan of water, and repot as often as the plants require it, until finally they should be placed for flowering in 32-sized pots, making the soil more rich than previously, with a portion of well-rotted manure. Give a good supply of water, both over-head and in the pans beneath the pots, and they will flower well and give satisfaction to the cultivator.

Cuttings are planted in a mixture of peat and sand, and are placed in heat under a hand-glass. They may also sometimes be increased by division; but as the plants are short-lived, it is better, if possible, to propagate by seeds, as above.

FLORICULTURAL NOTICES.

NEW OR BEAUTIFUL PLANTS FIGURED AND DESCRIBED IN THE LEADING BOTANICAL PERIODICALS FOR NOVEMBER.

Aquilegia leptoceras. This very pretty plant was raised in the Horticultural Society's Garden from seeds received from Dr. Fischer in 1846. It is a dwarf herbaceous plant, growing nine inches high. Each flower-stem bears one or two flowers on slender pedicels. The flowers are pale bright violet, with the tips of the sepals greenish, and of the short petals a clear bright straw colour. It is a native of Siberia, and quite hardy, growing best in a mixture of light sandy loam and a little leaf-mould. It is increased by seed sown as soon as ripe, and forms a good plant for rock-work.—*Bot. Reg.*, 64.

Bletia Gebina. A terrestrial Orchid, with flowers about as large as *B. hyacinthina*, and from six to eight in a spike, nearly white, with a faint tinge of blush. The lip is pale delicate violet. It is stated to be a native of Japan, and being nearly hardy, is a very desirable plant where there is no stove, as it may be grown in a cold pit kept close during summer. It should be kept rather dry while in a dormant state, but during growth should be well supplied with moisture and heat. —*Bot. Reg.*, 60.

Dendrobium cretaceum. This is a very distinct species, remarkable for the dull chalky whiteness of its flowers, which are nevertheless neatly pencilled with crimson on the lip ; this is owing to the whole surface of the lip, inside and outside, being covered with a short close white fur. It was introduced by Messrs. Veitch, through Mr. T. Lobb.—*Bot. Reg.*, 62.

Eria Convallarioides Major. The old species is hardly to be recognized in this beautiful variety. The oblong heads of flowers are of the purest ivory white, which is rendered still purer by the presence of small brownish bracts at the base. The surface, too, of every flower is so polished as to resemble that of white cowries or similar shells.—*Bot. Reg.*, 63.

Eucalyptus macrocarpa. One of the finest among the many fine plants lately sent by Mr. James Drummond from the Swan River Colony, is the present new species of *Eucalyptus*; the large and copious foliage is covered everywhere with glaucous white powder, and the bright red flowers nestled among the leaves form a striking object. Drummond found it at Guangan, an open sandy desert, commencing about eighty miles E.S.E. of Freemantle, and continuing for two hundred miles, on the borders of which this tree grew in an immense forest.—*Bot. Mag.*, 4333.

Iris aurea. This Iris was raised by Messrs. Whitley and Osborne of Fulham, five or six years ago, from Indian seeds presented to them by Dr. Royle. It flowers very freely, with the habit of *Iris ochroleuca*, and grows as tall. It will be an acceptable addition to the list of showy hardy perennials.—*Bot Reg.*, 59.

NEW, RARE, OR INTERESTING PLANTS, IN FLOWER, IN THE DIFFERENT SUBURBAN NURSERIES AND GARDENS.

Agalmyla staminea. Messrs. Veitch and Sons, of Exeter, forwarded for exhibition, to the Horticultural Rooms, Regent Street, last month, a most remarkable and very handsome plant, very singular, too, for its flowers have all the characters of the Æschynanthus tribe, while the habit differs very much from any of that family we are acquainted with. The specimen here noticed was about two feet high, with foliage six inches long and four broad, thick and fleshy, of a bright glossy green, a massy foot-stalk, about three inches long, fixing the leaf to the stem. The flowers were two inches long and of the brightest scarlet, rivalling the Scarlet Pelargonium in intensity of colour, and are produced at the axils of the leaves in dense clusters of upwards of fifteen flowers, completely enveloping the stem. The stamens project about an inch beyond the mouth of the flower, and are of a bright purple colour. As a specimen for cultivation, we should consider this to be the finest of the stove epiphytes we have yet seen. Messrs. V. received it from Java through their indefatigable collector Mr. Lobb.

Calceolaria cuneifolia. A species received from Bolivia in seed, and now flowering for the first time in the Horticultural Society's Gardens, Chiswick. It has a great profusion of pale yellow blossoms, and continues in bloom a considerable time. A most useful plant for bedding out.

Gloriosa Leopoldiana. In the nursery of Mr. Glendinning, Chiswick, this variety has recently been in flower; it differs from the old *G. superba* by the flowers being a self colour, that is all yellow; most probably a variety only. It will be very useful to grow with the *G. superba*, so as to gain a variety of colour. The habit is the same in every respect.

Gloxinia albo-coccinea. Some time ago we received from Messrs. Backhouse, Fishergate Nurseries, York, flowers of this charming hybrid Gloxinia; we could not see the beauty of its colouring, from the flowers being much injured by carriage; since then we have seen a growing specimen at Messrs. Rollissons', Tooting, which quite reaches our expectation, and certainly it is the prettiest variety that has yet been produced. The flower is pure white, having a deep broad dash of crimson down the throat and lower petal. The habit is neat and good.

Lobelia cœlestis. A very pretty and dwarf-habited Lobelia, with bright cœrulean flowers; the plant not rising higher than six inches, blooms freely, and will be a most useful bedding plant.

Lobelia braziliensis. Another fine hybrid variety, but tall, being near four feet high, two of which are occupied by the flowers, which are closely fixed on the stem; they are about an inch and a-half long, tubular, and a bright rosy carmine colour. We found both the above in the nursery of Messrs. Knight and Perry, King's Road, Chelsea.

Miltonia candida. We have again to record a fine specimen of cultivation, a notice of which we hope will please our readers. The specimen was in flower a month ago in the stove of Messrs. Rollisson, Tooting, and had nearly forty flower-scapes, each having from six to eight of beautifully variegated flowers, fully developed, making a dense mass of bloom completely hiding the foliage. The plant was in excellent health, growing vigorously.

Odontoglossum grande, *var.* labello album. Messrs. Loddiges, Hackney, have had some varieties of *Odontoglossum grande* blooming finely, much larger in flower, while the lower part of the labellum is quite void of the brown spots common to *O. grande*. We thought the colour of the sepals and petals not quite so rich in the brown; probably the lateness of the season may have had some effect in diminishing their brightness; in other respects it is a very handsome and fine variety, worthy a place in every orchideous collection.

Renanthera coccinea. A fine plant of this beautiful species was exhibited at a recent meeting of the Horticultural Society, Regent Street, by Mr. Woodham Death, of Nettleswell, Harlow, who stated that it was the third time of this specimen flowering in twenty-three months, a very rare occurrence, and one certainly never before under our notice, though Mr. D. says he finds no difficulty in blooming them. His treatment is to keep them in a cool greenhouse, fully exposed to the sun, with little or no artificial heat to assist them in blooming; and certainly a more handsome or better flowered specimen is rarely to be met with than the plant under notice.

Salvia sp. nov. A fine looking species, having long racemes of deep violet-blue coloured flowers, has lately been flowering profusely in the grounds of Messrs. Knight and Perry, Chelsea. The plant grows about four feet high, sending laterals out close to the ground and up the stem, covered with flowers; foliage ample, not large, and of a rich green. It will be a useful addition to the flower-garden.

Ruellia Purdieana. In the nursery of Messrs. Rollissons, Tooting, we found this species in bloom. Like most of the tribe, the flowers are not produced abundantly, but only in pairs, one on either side of the stem in the axils of the leaves; they are a brilliant rose colour, verging towards scarlet; this colour, allied to neat and handsome foliage, renders the species rather attractive.

Petunia sp. nov. Messrs. Veitch and Son, Exeter, have recently received from their collector in Peru a curious-looking species under the name of Nolana *spe.*, which most probably will neither belong to that genus, nor the Petunia, but prove a new genus altogether. It is certainly a very novel and beautiful flower, almost white, with a deep crimson throat, shading down the middle of each petal. The plant seems to have a creeping habit, has rather coarse foliage, downy, and of a pale green colour. Will be probably a most useful assistant to the hybridizer.

OPERATIONS FOR JANUARY.

January, although proverbially a cold month, is yet, generally speaking, rather a busy one; much, however, of what is done now, is under glass. In the stove the greater part of plants are in a state of repose, and their rest should be kept as perfect as possible: 55 degrees of heat by night is quite sufficient, if we except *Barringtonia speciosa* and a few others of equally tender habits, which can never be exposed to a temperature below 60 degrees, without injury. Water sparingly at the roots, but be careful that the atmosphere never becomes too dry; this is easily obviated by throwing a little water occasionally upon the floors; avoid, however, as much as possible raising a steam, as this would cause drip, which is always injurious at this time of the year.

In the Orchid house, rest also is what must now be attended to. The plants will require but little water, and the temperature should be low, yet the atmosphere, like that for stove plants generally, must be prevented from becoming too arid. By the end of the month such kinds as begin to show signs of growth should be repotted; but what is called the general potting season, will scarcely commence before next month. The temperature need not exceed what is recommended above for stove plants generally.

In the Conservatory and greenhouse, cleanliness both of the plants, the floors and the stages is of importance at this time of the year. Many of the plants are now in flower; these houses, therefore, will be places of much resort. Camellias in bloom will be benefited by a supply of clear weak liquid manure once or twice a week, but it should be made tepid, or at least equal to the temperature of the house in which they stand. Wherever insects are prevalent, fumigation must be resorted to, but it is always preferable, whenever any plants are infested, to remove and fumigate them at once; any increase of these depredators will be then effectually prevented. Ericas, however, before being exposed to the fumes of tobacco smoke, should always be well syringed, otherwise they are sure to receive injury. Chrysanthemums which have done flowering should be cut down and removed to a dry place. Epacrises, Correas, and many other plants of like habits will now be in bloom; place them in a very airy part of the house. Cinerarias also will now be generally throwing up their flowering stems, and as they are very thirsty plants, a good supply of water is indispensable, and care taken that they do not become covered with insects. Chinese Primroses, too, will now form a portion of the ornament of these houses; they always flourish best if placed near the glass, but too much light will soon cause the flowers to fall.

In the forcing-pit keep a good bottom-heat and plenty of atmospheric moisture. Plants which were introduced some time ago, will now be in flower. Others should be brought in to succeed them, amongst which may be mentioned the hardy American tribes, Roses, Azalea indica, and some stove plants, as Gardenias, Thunbergias, and Franciscеas. Also, where there is not a sufficient number of Verbenas, Heliotropes, and other half-hardy plants for bedding out in the summer, it is advisable to introduce some of these, that a sufficient number of cuttings may be put in early in the season.

In pits and frames keep out the frost with good night coverings, but expose the plants to the air as much as possible during the day. Remove all decayed and decaying leaves, and keep the atmosphere as pure and healthy as possible.

In the open air prepare Ranunculus beds for planting in February. Examine Pink and Pansy beds, and if the frost has loosened or raised out of the ground any plants, let them again be fastened. Shelter Carnations from excessive wet weather. Make gravel walks and new beds in the flower garden, or renew the soil in old ones. Prepare ground for planting shrubs, and do anything else which the weather will permit to be done.

ERRATA.

In page 34, line 22 from the top, for *Pistaccia* read *Pistacia*.
,, 37, line 8 from the top, for *Calampalis* read *Calampelis*.
,, 46, at section 5, for *Lossal flowered* read *Tassel flowered*, and
,, 211, for *Limsia anethifolia* read *Simsia anethifolia*.

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